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[OFFICIAL NOTICE.]

June Meeting, Society of Gas Lighting.

OFFICE OF THE SECRETARY, May 28, 1898.

The June meeting of the Society of Gas Lighting will be held in "The Arena," No. 39 West 31st street, New York city, at 3 P.M., of the 9th prox.

FRED. S. BENSON, Secretary.

[OFFICIAL NOTICE.]

Wrinkle Department, Pacific Coast Gas Association.

MERCED, CAL., March 11, 1898.

To the Members of the Pacific Coast Gas Association: At the last meeting of the Pacific Coast Gas Association to me was delegated the duty of collecting and presenting any matter, in the shape of original ideas or special devices, which may come under the head of "Wrinkles," to be presented in proper form for the benefit of the Association at the next regular assembly.

Many of our members having charge of gas plants on the Coast have many plans, that are practical, handy and labor-saving, which many others by force of circumstances have never seen, but who, on presentation of the device, drawn and described, or through the medium of our official organ (the AMERICAN GAS LIGHT JOURNAL), would gladly embrace the opportunity, and put into practice a plan very beneficial—which perhaps had been in use in some obscure place many years, used exclusively by one man—that would, when given daylight, benefit the whole gas fraternity.

On reading this communication, please see if you have not forgotten something in the shape of a "Wrinkle," that is doing good service in your works, that would be of great importance to the Association. Your answer to this will greatly oblige.

GEORGE H. HOLLIDGE,
Editor "Wrinkle" Department.

BRIEFLY TOLD.

THE WESTERN'S DETROIT CONVENTION.—Last week's despatches respecting the Western Association's twenty-first annual meeting were voluminous to the point that renders much further attempt at recounting the proceedings quite like retelling a story; but a word or two about the entertainment provided by the Committee, on the afternoon of the second day, for the gentler visitors, and pretty much all of the third day, for both sexes, may not be out of place. Col. Croul, "Boss" Van Wie, Landlord Chittenden, Dr. King, "Everyday" Lynch, and "Printer" Cooper, to say nothing of "Gas Man" Douglas, and the "unmentioned others," it may be taken for granted know quite well how to run an entertainment committee, so it should go without saying that the Western's members and guests, when the last card of the committee had been played, had to admit that the aforesaid good men and true are dealers of a superior class. The outing on Thursday afternoon, which was altogether for the entertainment of the gentler visitors and their escorts, was begun in response to an invitation that read quite like this: "The Detroit Stove Works request the pleasure of your company on

Thursday afternoon, May 19th, at two o'clock, on board Commodore M. B. Mills' steam yacht *Cynthia*." When the *Cynthia* steamed "out of port" the thinking newsman counted a party of not less than 60, and of the 60 no less than 40 were of the gender that loves to puzzle us. However, he who said that harmony did not prevail must have scant wit, although the odds were so greatly on the side of the puzzlers. The "Dardanelles of the New World" never was in more impressive volume, and never in its beautiful showing did Belle Isle Park make a prettier picture. The tender, restfully brilliant greens of Dame Nature were potently in evidence, and what with spring's radiance to greet the eye, with excellent music to hold the ear, and with a dainty, tasteful luncheon to enliven the palate, who may say that aught was lacking for complete enjoyment—the sun shone over all. The trip was over 10 miles straightaway down the river, then returning one side of Belle Isle Park and down by its other side, the home landing being made at the marvelously large and well-equipped works of the Detroit Stove Company. Special trolley cars took the party to the boat from the hotel, and like conveyances brought the party back from the Stove Works to Mr. Chittenden's castle. The trip was a most enjoyable one. The general outing on Friday was, as to perfection of detail and as to thorough success, quite like the outing of the day before. Some 300 shared in its delights. The route, of course, was different from that of Thursday, the "unprotected cruiser" *Promise* carrying the voyagers over the wonderful stream that "laves Ontario, free from the U. S." Keeping close to the Canada shore for quite a stretch, the route then was through Lake St. Clair, the Government Canal and the St. Clair flats, and the whole was a complete chain of panoramic beauty. The Entertainment Committee had seen to it that not a thing was left undone that should have been done to insure the complete comfort of the guests.—"MAC."

THE GENIUS OF "TOM." MAGUIRE.—St. Louis in general, and the Laclede Gas Company in particular, may be reported as chokeful of geniuses, and the respective manifestations of genius there shown are frequently beyond the ordinary manifestations of geniuses in Cincinnati, or New York, or other populous centers. To show that this is no joke we reproduce the following lines forwarded by a St. Louis correspondent—we will say for our correspondent that ordinarily he is considered a truthful man: "Tom. Maguire is a yard foreman employed by the Laclede Gas Company. A sewer pipe leading from one of the buildings to the river bank, perhaps 160 feet away, became clogged. The pipe was 16 feet below the surface. Maguire had been thinking about a plan for several days. One night he caught two big, gray rats, and these he determined to put into the sewer. They were taken to the mouth at the river bank and released. The opening was then securely closed behind them, leaving the animals with only one chance for life, which chance was to go straight ahead, and they did. Several more rats were caught and turned into the sewer, until a dozen were gnawing away in the pipe. The morning after the last detachment joined the main army, water began to trickle from the pipe. Iron rods and steam were applied. In 10 minutes the sewer was clear." Our correspondent failed to tell what became of the rats.

NOTES.—Rumor again has it that negotiations looking to the transfer of control in the Washington (D. C.) Gas Light Company are underway.——It is said that the Universal Gas Company, of Chicago, is in the market for proposals for the construction of a 5,000,000-foot holder. ——Write to Messrs. W. M. Crane & Co., of 838 Broadway, N. Y., for a copy of their excellent pamphlet, compiled for them by Marion Harland, entitled, "The Comfort of Cooking and Heating by Gas."——The proprietors of the Michigan City (Ind.) Gas Light Company have put the selling rate for a fuel gas supply at $1 per 1,000.——The Ogden Gas Company, of Chicago, having reached the point where its output is in excess of the generating apparatus originally installed, has contracted with the United Gas Improvement Company for an additional apparatus, up to a daily make of over 1,000,000 cubic feet. The original installation on the Ogden works was made by the United Gas Improvement Company.——Charlotte, Mich., it is said will light its streets by means of the improved Welsbach lamp. Electric arcs have been in use there for some years.——The San Francisco Gas and Electric Company has agreed to supply gas for the city's public buildings at the rate of $1.50 per 1,000 cubic feet.——The authorities of Pierre, South Dakota, are contemplating the advisability of purchasing the local gas works, for operation on municipal account.——At the organization meeting of the Directors in the Portland (Me.) Gas Light Company the officers chosen were: President, Mr. Edward H. Daveis; Treasurer, Mr. F. E. Moore.

[OFFICIAL REPORT.—REVISED BY THE SECRETARY.]

PROCEEDINGS, TWENTY-FIRST ANNUAL MEETING, WESTERN GAS ASSOCIATION.

HELD AT THE RUSSELL HOUSE, DETROIT, MICH., MAY 18, 19 AND 20, 1898.

FIRST DAY, MORNING SESSION, MAY 18.

The meeting was called to order at 10 A.M., May 18, by the President, Mr. James T. Lynn, of Detroit, who said: Gentlemen of the Western Gas Association, we welcome you to Detroit. For the last eight or nine months I have been preparing an address of welcome to you, but only the other day I was informed that nobody other than the Mayor of the city was allowed to formally offer to any distinguished delegation the hospitality and freedom of Detroit. Knowing that you will regret the waste of thought to me that this custom enforces, I find solace in the knowledge that our Mayor, of whom we are proud, will welcome you in heartiest way. I have pleasure, gentlemen, in introducing to you the Honorable William C. Maybury, Mayor of Detroit.

MAYOR MAYBURY WELCOMES THE ASSOCIATION.

Mayor Maybury addressed the Association as follows:

Mr. President and Gentlemen of the Western Gas Association: It affords me a very great pleasure to welcome you to the city of Detroit. I want to say to you that we have here, among those connected with the business that you represent, some citizens who are very dear to us for every reason that would make one man dear to another. I might seek to entertain you at the commencement of your deliberations by attempting to tell you some truthful stories, when, as a matter of fact, my duty is simply to deliver a speech of welcome. I came here this morning appreciating the fact that you are here for business, and it occurred to me to wish that I could be as brief in the discharge of my present duty as was a distinguished countryman of mine, who was employed some days ago in extending the height of a chimney upon the house of the Spanish Legation at Washington. He was the gentleman who carried the hod. Somebody came along and attached a little Spanish flag by a staff at the bottom of the ladder which he was using. When Patrick came down the ladder he noticed the Spanish flag and loaded his hod with a few more bricks than was necessary. Then as he got up to the second story of the house some of the brick accidentally fell to the ground, taking the staff and flag with them. A gentleman passing by, and seeing what Patrick had accomplished, said, "That is mighty good American brick." Pat, looking down, said, "Yes; I guess it is good American brick, but it is of Irish descent."

I think perhaps at the outset I should caution you against what seems to me to be a conspiracy; but it is a conspiracy in the direction of your spiritual welfare. When I looked over the list of names constituting your Committee of Entertainment I felt it my duty to call your attention to what is likely to happen, for I noticed on that Committee the name of Col. Jerome Croul, of the city of Detroit. If there is any man in the city who knows the Westminster Catechism, from beginning to end, that man is Jerome Croul. And, at the same time, if there is any gentleman here who can tell you the ingredients of the latest cocktail, it is this same Jerome Croul. Associated with him on that Committee is the distinguished proprietor of this hostelry, in which, if you are careful to get in in time, you may manage to be able to get a seat and a meal; but if not, there are some restaurants around here which will take good care of you. As to his spiritual condition, I assure you it would be simply impossible for you to adjourn without having a sermon on the Apostolic Succession—with a brandy and soda at the side.

In view of these conditions I have taken the precaution to notify our police that possibly it might be necessary for some of you at some time while you are here to have a password. If you need anything of that kind (for our streets are somewhat mixed up, radiating as they do from various centers—and sometimes we get mixed up ourselves as we go about the city), just make a sign as if you were turning off the gas, and that will be understood by everybody. (Applause.) I might also ask you to make the sign of turning off the meter—but I do not.

As I came around I said to Col. Croul, "You will succeed in doing a very excellent thing at this meeting, besides welcoming these gentlemen, if you will ask them to give us the secret of perpetual motion, as they seem to have discovered it; and especially ask them if they will not explain to us the mystery of how the meter will run just as well when a house is empty as when it is occupied."

Gentlemen, I welcome you to this good, old city. I understand that you have to-day with you some from across the border, as well as from all parts of our own country, even including a member of the Tam-

many Society, of the City of New York, who makes every Association meeting complete. I want to say to you that you are all welcome to the city. We are glad to be able to know you. We feel very much about the city of Detroit as a man does who has a beautiful home in which he is interested and which he has furnished nicely; he likes to have his friends come and see him and enjoy his hospitalities. I am sure that I do not trespass upon modesty, or in any way trespass upon good feeling and sense, when I say that we think we have here a very beautiful city, and I believe you will agree with us in that respect after you have gone about and seen it (as you will have an opportunity to do) in charge of our friends upon your Committee of Entertainment. We do not claim very much for ourselves nor for the buildings of our city, but we do claim much for its natural location. This beautiful river is an unending source of pleasure to us, and the beautiful park of 700 acres on the river is one by which the commerce passing floats no flag save the stars and stripes. (Applause.)

A short time ago the statement was made in the city of Glasgow, by a Detroit citizen, that more commerce passed by the city of Detroit than entered the ports of London and Liverpool combined. That seemed to raise a great sensation among our Scottish shipowners who know the Clyde and the Mersey so well; but our friend happened to have with him the report of the Commissioner of Navigation by which he was able to show that the tonnage which passes by this city is greater, both in value and in the aggregate, than that which enters the great ports of Liverpool and London. More vessels and greater tonnage pass through our canal, the Sault Sainte Marie, in the seven months of navigation than pass through the Suez Canal in the whole year. I do not think that any of our friends who live at a distance from the borders of these lakes can possibly appreciate the magnitude of this commerce, and the fact that is carried on the bosoms of these lakes that which sustains so much of our great country. I remember that, on one occasion, a distinguished Senator from Texas was taking a trip upon these waters, who had previously persistently opposed an appropriation by the government for the improvement of the navigation of the lakes. There passed by him as he rode along one vessel, the largest of her class at that time, the "Eddy," carrying 280,000 bushels of wheat. He looked at her as she passed and said, "She is like an ocean steamer." Then he began to calculate as to what that cargo amounted. On an average of 400 bushels of wheat to the ordinary car, that cargo would fill five trains of 50 cars each, or a solid train reaching nearly three miles along the track. It meant the harvesting of two or three townships of wheat, of the average production of 16 bushels per acre. It is only when men get an object lesson of that kind that they are able to appreciate what the commerce of these great lakes really is. They must come here and see it. I trust that when you take your excursion upon the river to-morrow you will notice, as you certainly will, the commerce as it passes by.

As to the city itself, I may say that in 1803 it was burned over, and it was then laid out very much after the plan of the city of Washington—with streets radiating from certain centers like the Campus Martius here, from where I want to say that 1,000 of our boys left for the field of battle in the last 10 days. (Applause.) As you go northward you will find what we call the Circus Maximus, from which radiate the larger avenues, running out like the spokes of a wheel, and are intersected by streets.

But what we of Detroit pride ourselves upon most is our cottage homes. Block after block, and mile after mile of these you will see as you go through these streets; and in almost all cases you will see the evidence that each cottage belongs to the man who lives in it—that it is not a rented home—he owns the soil and he owns the cottage. You will find evidence of that in the fact that here and there and everywhere the rose bushes climb upon the trellis above the door, and you will see the kindly care of the housewife; and in the gardens where live our German residents you will find every inch of ground either used as a garden and made productive and contributory to the table, or else, by its flowers and plants, made contributory to the comfort and refinement of the home life. It is in these homes that we pride ourselves. It is to these that we call your attention, for it makes a great deal of difference in a city whether its inhabitants live in rented houses or enjoy the comforts and refinements of their own homes. The enjoyment of such homes makes a people loyal to the city in which they live, as our people to-day are loyal to the city of Detroit.

In your art you probably illustrate the advancement of this day and generation as well as any art which can possibly be presented. I believe that the matter of lighting, and perhaps of heating, is one of the lost arts. As we look over the history of the world, as we read of the great buildings of ancient times, I cannot believe that they were not lighted, or that they were not heated. I cannot conceive of a time when people were not clad as they are to-day. I cannot believe that the great exhibitions of ancient times which were held in the Colosseum, and in buildings even more ancient, were given without light and without heat. I believe that in those days there was perhaps almost a complete duplication of what you have to-day, in respect to lighting and heating. I believe there are very few of the arts of the world to-day that did not exist under civilizations of other days. I cannot conceive why men who made such magnificent sculptures in Greece, that even with the knowledge which we possess at the present time we cannot duplicate them, could possibly have been people of such intelligence that they were content to live in squalor, or in the absence of those comforts that would necessarily attend the absence of light and the absence of heat. In my judgment, in some way, though lost to the world oftentimes because secretly used by those who had to live by those arts, they then existed. In those days if a man possessed a secret, out of which he could realize something for his own benefit, he kept it to himself, and when he died it died with him. That was the rule with the physician, the rule with every artisan—that he kept his art to himself, and made the most of it for himself; but we cannot do that to-day. What man now has he gives to the world. If it be for the betterment of humanity he is only too glad to say, "I am glad that the world can be made better because of my living in it, and so that not only my own kindred but others as well, may be made better for what I have done." That is the bond that binds us together. For that reason there never again will be any lost arts. And these arts will improve as the generations go by, just as the early torch has been improved into the beautiful lights that now illumine our streets and buildings.

As I have heard and read of the product that so many of you are interested in, gas, I have wondered what will be the future of the various methods of lighting and heating that are being discovered and improved. As one gentleman very wisely and sagely said to me, the very fact that these lights are brighter than were those of the past will cause people to demand still more light, just as in every department of art and science the discovery of anything really good is immediately followed by that of something better. So that it is a mere matter of progression. I think, in saying that, he struck the secret of the whole thing.

And so, gentlemen, to the environments of this city, to everything that provides for clean lives and clean living, to everything which in nature and art alike have combined to make these environments beautiful and dear to those who here have their homes—to the hearts of our people, and to our city, I extend to you all a most cordial welcome. (Applause.)

The President—We have with us, from the city of New York, a gentleman who refused to go to the war, but is always willing to talk. Gentlemen, he needs no introduction—Capt. William Henry White.

Capt. White's Response to Mayor Maybury's Welcome.

Mr. Mayor, Mr. President and Gentlemen: I am always grateful for the task of being thankful, but I feel to-day an additional pleasure in expressing my thanks, for I was advised before coming here to acknowledge your gracious welcome, that a very dear old friend of mine, and the friend nearest to all our hearts of any one of our members, was dangerously ill. And so I promised to fill the place of "Uncle Jerry" Howard—a place that no other living man can satisfactorily fill; but, much to my astonishment, as well as pleasure, when I arrived here this morning the first cheerful face I saw was that of dear old "Uncle Jerry." Recognizing the trick that had been played upon me, I was yet delighted to know, as I know you all are, that this dear old friend of ours is able to be here with us, and can laugh at my humble efforts to fill his place.

I need hardly say to you, Mr. Mayor, that you have judged wisely, looking into our faces, that this is a select assemblage of bright men. Some of us from the seaboard, as the President has delicately hinted, are present because we feel that here we are a long way out of the reach of Spanish guns; for they say the Atlantic coast is getting dangerous. We meet here upon this common ground, gentlemen from the extreme West, who here come as near to those dangerous guns of the Spaniards as they care to go. Therefore, we the refugees from the East and these patriots from the West meet in your welcoming city.

I heartily agree with you that this city is all that you say of it and claim for it; but I pause for a moment, when I think of that wonderful stream of commerce passing up and down this magnificent river of yours, and affording such pleasure and profit to the city of Detroit, to contrast it with that generous stream of other liquids which has been forced upon us for the last two days, and which our palates have so

enjoyed. And so Detroit has pleasure in counting the tonnage of many variations of commerce, just as we have had in counting the cocktails that pass our palates. (Laughter.)

I will kindly pass over, Mr. Mayor, in your presence, your slurring charge upon the corner stone of our profession—the meter. We are used to hearing that slur. We do not mind it, for we well know that it attends strictly to business; and the gas man has the satisfaction of knowing that the meter toils and sweats and labors while he sleeps. Consequently we are proud of our meter. We think it a glorious thing, for it is the most industrious thing that a gas man knows anything about. Therefore, we laugh in silent glee when you and others attack its perfect working.

It was certainly kind and thoughtful of you—and perhaps needed by this gathering—knowing so well the Chairman of the Committee that is entertaining us, that you should have said to the police, and doubtless beyond that, to the police justices as well, that any man who, at certain hours of the night can make the sign of turning off the gas, should not be arrested. We may need this care and are grateful for it; and we trust that the gentlemen who represent the press in this city will, the next morning, kindly throw the mantle of charity over our little misdoings, when the policeman kindly guides our wavering footsteps to the front door of this hotel; and that, for the sake of the charming but sometimes angry and heated wife waiting to welcome us to our temporary home, the newspaper will make no remark about it. And I am right in speaking of the somewhat angry wife awaiting us up stairs, for you must know that we not only bring ourselves here, as examples of the business men of this great industry, but, rivalling the beautiful women of Detroit, we bring our wives, our sisters, and occasionally our sweethearts, to show you that there are other women in these United States, worthy to rank beside the charming women of Detroit. We are proud of our women, for we know their tempers and their dispositions; and I want to say to you that if ever it becomes your fate, or of that of a son, to need a wife, come among the gas people and pick out a woman that you or your son may marry; because they are long sufferers. They go about with us to these meetings, and many times they have to help us take off our shoes. (Laughter.) But, with all that, they are the loveliest, the most forgiving, and the most dutiful band of women in the world; and as we go about from city to city and exhibit this product of our industry, and show what kind of women have picked us out, and have so distinguished us, we are proud of them, and are the envy of our friends.

I may say that this great industry which we represent is great in the broadest sense of that term. It is second only, in the amount of capital employed, to the great railway interest of the country. I leave you to judge, as you look at the faces of these men, whether they are not worthy to represent the great industry and interests entrusted to their care. We are here for the small per diem which these earnest, hard-working men get for the whole year. We have no 30 day vacations. We are not like the fellow who became ill, and his physician said to him, "You have got to stop work, and take a rest. I think you had better get a government job, and lie around on it somewhere." But the man replied, "Well, I don't know about that. Do you mean that I need a sinecure?" To which the man of medicine replied: "I don't care whether it is a sinecure, or what kind of a cure it is, but that is the only kind that will cure you." Now I do not know of a man in this room who indulges in a sinecure. Most gas men work for 25 hours every day; and yet some of our Presidents are grudging them their leisure, and say there ought to be some change made in the calendar which would enable the men to work 26 hours per day. So it is you see us here, even in this playtime, anxious to work, listening to papers which our brethren have prepared for us, and then indulging in careful analytical discussions of the thoughts advanced in the papers. And if, during the little break in the session at noonday, you should happen, while passing along this beautiful street to look in at the door of this café, do not be startled if you should see three or four of these wearied men leaning upon my shoulder, and I leaning upon the bar, while the chemist in front is busily engaged in mixing some wonderful combination of liquors and other things; and don't think for a moment that that is what brought us here, or that that is our usual vocation; for I will back this institution against any body of similar number anywhere in the world for doing hard work faithfully, conscientiously, and with their whole heart, at all times.

I thank you, in their names, for this welcome to your beautiful city. We rejoice with you that a thousand of your sons have gone out to this great fight. The gas men, as in the old war, are preparing and are prepared to send their people out to do their part in this fight. We all feel that, no matter what mistakes may have been made at the start, and no matter whether it is just and right or not, it is the cause of our country, and we are all for her. It is: "Our Country. May she ever be right; but our Country, God bless her, right or wrong!" (Applause.)

On motion of Mr. T. D. Miller, the reading of the minutes of the last meeting was dispensed with, and the calling of the roll was postponed. The Chair was then assumed by Vice-President Thompson and President Lynn read the following

INAUGURAL ADDRESS.

Gentlemen of the Western Gas Association: Almost two decades of activity and advancement have come and gone since those to whom the honor of organizing this Association is due bound themselves in a fellowship which advancing years only served to cement more firmly and expand to a broader circle. As a Society, whose members meet on a common plane, and whose individual purposes are fraternal and unselfish, it has had no superior among the vast number of industrial and educational institutions which have existed for the propagation of business principles and the elevation of mankind. It has studiously considered not only the individual interests of its own members, but also those of the patrons of the great industry it represents. The valuable contributions of its members in the past possess an influence which shall extend onward with the march of time, lightening the burdens of future generations. The constant change ever occurring to man and his works has found our industry at all stages keeping pace with the busy world of progress and science. Too much cannot be said in commendation of your laborious efforts to improve the condition of your co-laborers, and through them to impress the world at large with the infinite goodness of an Omnipotent Being, who has placed within the reach of His creatures the means of obtaining their own comforts and conveniences.

On the 18th day of September, 1878, 28 persons, interested directly or indirectly in the gas business, met at the office of the old St. Louis Gas Company to organize what we now proudly call the Western Gas Association. Since our first meeting at least 600 names have been placed upon our roll, and we now congregate at our Twenty-first annual session with the same hopes, fears and experiences which combined to interest us at preceding gatherings.

The territory from which our members come has become so extensive that the name "Western" may be considered to imply the "Western Hemisphere." We have gathered on the East, at the great manufacturing city of Pittsburgh; on the West, have viewed the mighty Mississippi sweeping on in its majesty by that thriving commercial center, St. Louis; on the South, have stood on the heights of Lookout Mountain, and surveyed in their grandeur the scenes which have entered the immortal pages of American history with the names of Hooker and Chattanooga; and, finally, have turned Northward for the second time to pass an enjoyable and profitable period in the beautiful City of the Straits.

Detroit has her position in our country's history; her people have industriously heightened her natural beauty by improved streets and public parks, while nature to it has given the advantages of one of the most attractive rivers in the world, and a commercial position inferior to that of no other city in our glorious Union.

Progress of the Year.—The past year has been one of prosperity and satisfaction to gas companies in general, and the bright bow of promise continues to smile upon our efforts and encourage our workers to renewed activity. Incandescent gas lighting, while it has upon the whole been an agency toward increasing the consumption of gas, has in some instances been a source of temporal loss to companies operating in smaller cities.

To overcome this result the manager of such a business must rely upon his greatest energies and accomplish what he can, not only to offset such loss, but, by making a thorough canvass and advertising his product, to reach avenues neglected in the past, and turn an apparent loss into a positive gain. Gas as a fuel continues in the ascendant, and from this fact alone we have much upon which to congratulate ourselves. One great satisfaction in the placing of a fuel meter is the assurance of a constant consumer.

The people are being rapidly educated to the fact that such fuel has not only a convenient, but an economic feature; and its use for cooking purposes and for heating in a small way during the spring and autumn months is fast becoming general. Progress upon this line has been such that many companies can show a larger output for fuel purpurposes than for illumination during the summer months; in fact, a few are able to show more than 50 per cent. upon annual sales.

New Members.—It is deemed advisable to recommend the appoint-

ment of committees in individual States to solicit members for this Association among the persons engaged in the gas business in their respective territories. While this may lead to no very marked results in such States as maintain local organizations, it would, upon the whole, tend to greatly advance the interests of this body. There are engaged in business in the various Central and Western States a large number of officials of gas companies who do not realize the true value of these annual meetings, and who could be more easily induced to enroll their names if their attention was called to the importance of doing so by members qualified to state the matter in an intelligent and capable manner. The work of such committees could be conducted with no expense to the Association, and would undoubtedly be of great advantage not only to us, but to those who might be reached in this way. Members who are placed upon such committees would find the work no great task; in fact, I am inclined to think would find a great deal of pleasure connected with the same.

Public Lighting.—With the perfection of devices employed, we may consider the effect of gas lighting upon public streets and thoroughfares.

Incandescent gas lighting for such a purpose has proved itself not only cheaper than the electric arc system, but has demonstrated its ability to produce better satisfaction. When the old gas lamps were supplanted by electricity some years ago it was the general verdict that their disappearance was final; but slowly, as improved methods of using gas have come into vogue, they are creeping back to the view of the public in improved forms, and their advent is hailed with assurances of success. All that is now required to recover a considerable share of public lighting is expense of energy and perseverance upon the part of the gas manager. In the instances of modern incandescent public gas lighting coming under my own personal observation, all have been clearly proved superior to any other method of artificial illumination, not only in respect to good service but as a public economy. In the smaller cities and towns in particular, where an urgent demand for reduced taxation and public expense is ever extant, it would be advisable for our fellow workers to put forth every energy at their command to make an inroad into the municipal lighting. Once the system has been inaugurated there is no apparent reason why it should not become a permanency. In view of all which has been said at previous meetings respecting the details of the method it is not necessary to dwell to any further extent upon the matter, but it is hoped in this brief review that some words of encouragement and hope will spur our members on to a renewed effort and be the source of advantage to the gas interests.

Improved Methods.—A discussion of the present status of incandescent gas lighting and fuel consumption leads directly to the future policy which might reasonably govern the production of gas. As these uses involve the principle of heat, it would seem that the production of a gas capable of generating the greatest number of heat units, without regard to high illuminating power, is undoubtedly to become of vast importance. With the cheapening of incandescent lighting appliances, the old lava-tipped burners are rapidly disappearing and may soon become a relic of the past. The time has been when, to face the competition of electric lighting, we were compelled to manufacture a high candle power gas; but the most successful weapon against other methods of illumination has proved to be, not the application of primary light, but that of incandescent heat. Time would not permit this subject the consideration it justly merits, but it would be of vast interest to the gas world should the subject of incandescent gas lighting and the effect upon future systems of production be subjected to investigation by some member of this Association, and a complete discussion of the matter follow at our next regular meeting.

From observation, one is led to the opinion that acetylene as an illuminant will in all probability be confined to isolated plants in summer residences and hotels. In a general way its application to domestic and commercial lighting appears of insignificant importance, and so far as its disposition as an enriching agent is concerned it has made no marked advancement, and it is not probable to meet any extensive use for such a purpose. Although considerable capital has been interested by the promoters of acetylene, it seems that the purpose of the organization of their stock companies can be none other than to take advantage of those who are credulous enough to invest in such schemes without making a prior and thorough investigation of their merits.

Leakage.—In the efforts to reduce wasteful leakage, and the disinterested work of our Association to trace the manifold causes and ascertain remedies for the same, the hearty co-operation of all should be extended. While it may be an excellent and convenient plan to make corrections for various temperatures and atmospheric conditions, it must be considered that these same conditions are probably present at the point of consumption, and the method in reality possesses but an insignificant relation to the subject of loss. The safest and most simple method of reducing the percentage of leakage to a minimum is effected by keeping the main and service system in first class condition, paying proper attention to the correct working of meters and building up the largest possible sales per mile of mains. Shrinkage is attended by so many complicated conditions that it is an impossibility to define even an approximate rule for its determination.

Fuel Gas.—The advent of a very cheap fuel gas, after repeated failures of promoters to manufacture a product which might compete with solid fuel and natural gas, seems as remote to day as ever. Numerous methods proposed have been introduced, weighed in the balance and found wanting. The extent of these failures was clearly portrayed at our last annual meeting, and I am convinced that conditions still remain as they were then; in fact, time seems only to emphasize the certain failure of such enterprises. There is no doubt that the cheapest artificial gas for such a purpose could be produced in a district lying closely to the bituminous coal fields; but it must be considered in this connection that it would be necessary here to compete with cheaper coal. The coke produced would also be under the same disadvantage, and if sold in some other market must be placed in a car at a tonnage rate scarcely exceeding that it would bring at home. Probably the failure of natural gas in some of the coke producing sections may in a few years lead to the demonstration of the theories of fuel coal gas enthusiasts, but it is not probable that any other condition is likely to bring about such a result.

Coal Tar.—The attitude of buyers of our coal tar product, as evidenced in prices quoted for the same, prompts me to state that the time has now arrived when the larger companies should follow the example already set by a few, and install plants for the purpose of distillation.

It is unnecessary to say that the receipts per ton of coal carbonized can by this method be considerably increased, and at the same time, where carbureted water gas is produced, something can also be realized from the oil tar produced.

Some smaller plants are receiving, from information at hand, a better rate per gallon of coal tar than those in the larger cities, where it is still the practice of selling to an outside market, while others have received offers ridiculously low.

In cases, however, where they are not obtaining satisfactory compensation for their product, if the larger companies take the step suggested they may be able to assist their smaller and weaker neighbors. In many cities, even where a large production of coal gas exists, the products of distillation would be insufficient for the local demand, and by controlling the home market it would be an easy matter to reinforce the production by purchasing that of the smaller companies operating in the vicinity. Where at least 2 cents per gallon cannot be obtained, the best policy would be to burn the tar under retorts, excepting in those plants which can obtain merely a trifling return from coke.

Municipal Ownership.—Considerable noise has accompanied the frequent agitations of municipal ownership of gas plants; the people have been promised cheaper light and fuel, and a certain reduction of taxation. Not an instance on record shows that these conglomerate promises have been fulfilled. Municipal ownership of any producing plant is and must be accompanied by the creation of office and employment for political leeches, and a class of men in whom no conscientious business man would place confidence. In the cities the cry is made in order to strengthen the establishment of formidable rings, the policy of which has never been to benefit the many honest residents and taxpayers, but rather the few political workers, who must be fed for their support. Business is never conducted on a proper basis, no attempt is made to reduce current expenses, and at the end of the year things are neatly veiled, and the unsuspecting citizen led to believe that his interests have been carefully guarded.

Recently the social reformers whose cry has been "Municipal Ownership of Everything," have received their hardest blow by the leasing of the largest municipal gas plant in America to a corporation of business men who will fulfill all their promises, and, by conducting matters upon proper lines, satisfy their patrons and make a success of their undertaking. This is an illustration of the indisputable truth of the saying of that great and lamented American: "You can fool all the people part of the time; you can fool part of the people all the time; but you cannot fool all the people all the time."

Success of one political party or ring at several consecutive city elections, and its control of the various municipal departments, invariably leads to carelessness of methods, which prompts just inquiry and censure. Organized for its own advancement and the pecuniary gain of

its individual adherents, wherever it can employ men it increases its power; and it is in most instances a desire to increase the number of its hirelings and dependents that the issue of municipal ownership is raised. Such movements are always initiated by falsely informing the people that gas companies and kindred corporations are extortioners, and have no care for the accommodation of their patrons—in fact, that all their acts and tendencies are grossly detrimental to public welfare. It would be a waste of time to attempt to refute these unjust charges to auditors so well acquainted with their absurd falsities; but if the careers of the most prominent of self styled reformers are closely observed, it may readily be noted that they are either insincere or are the mere tools of shrewd, oily-tongued political mountebanks.

Our Deceased Members.—Many of the older members of this honorable Society have passed to another sphere, leaving behind monumental memories of kindly feeling and valued advices and encouragements. Each year, as it becomes a portion of the great past, adds to our recollection not only of content and peace, but also of sorrow and regret over faces and forms absent and gone. Names which have become memories and to which no response will ever come again in earthly councils, impress upon us the constant changes of all things.

During the past year death has removed from our midst three of our members, as follows: George S. Harris, Superintendent Mansfield Gas Light Company, Mansfield, O., June 14, 1897; A. E. Smythe, Secretary Mutual Fuel Gas Company, Chicago, Ills., July 9, 1897; and J. D. Thompson, Treasurer Laclede Gas Light Company, St. Louis, Mo., February 15, 1898. The latter had been many years one of the foremost and energetic workers in this Association, and in his death we have sustained an incomparable loss. The past services of the other gentlemen named have been full of honor, and the world is better for their careers.

It is difficult to express our deep regret that we shall miss their genial faces and pleasant greetings at future times, but their memories shall ever be verdant in the minds of those who knew and loved them.

Our National Influence.—In conclusion, it is well to make some reference to the condition which is causing the American heart to throb with patriotism and that love of the right which is the true corner stone of our glorious republic. While the present little unpleasantness with Spain may by some be considered deplorable from a business point of view, fears of any but satisfactory results to our national institutions and commercial interests have no foundation. While it is regretted that stern action upon the part of our government has been necessary, the ultimate outcome must undoubtedly be the expansion of American principles and the opening of new avenues to all legitimate American trade. Recent developments have proved that the so-called pleasure and money-seeking Yankee has lost not a particle of his original love of his country nor of his commendable desire to assist and protect a suffering and persecuted people. On the contrary, we have convinced other nations that the advancement made in business, as well as in the social and scientific life of our countrymen, has been attended by a remarkable progressiveness along other lines, and an undeniable capability to do mortal combat for the cherished principles of justice and freedom.

United in sentiment and in action, the citizens of the United States stand to-day in full view of the eyes of the inhabitants of both hemispheres, portraying all that excels in manhood, intellect and firm resolution. Nations which have ruled the world with chains and tortures have all been weighed in the balance and found wanting, and it may be that the munificent Creator has decided to replenish the earth with the growth of that liberty which found its birth among English-speaking people. (Applause.)

On motion of Mr. Egner, the address was referred by Chairman Thompson to a committee of three (Messrs. Frederick Egner, Donald McDonald and Alten S. Miller) for consideration and report. President Lynn reassumed the Chair and announced the following

Special Committees.

Committee on Memorials.—Messrs. I. C. Baxter, G. G. Ramsdell and C. W. Blodget.

Committee on Place of Next Meeting.—Messrs. E. G. Cowdery, J. B. Howard and Jas. Somerville.

Committee on Final Resolutions.—Messrs. B. E. Chollar, Paul Doty and E. G. Pratt.

Report of Committee on Applications for Membership.

Mr. Wm. McDonald, from the Committee on Applications for Membership, reported in favor of the election of the following named gentlemen:

Active.

Baehr, W. A., Milwaukee, Wis.	Goodno, G. F., Cedar Rapids, Ia.
Barthold, W. H., G'd. Rapids, Mich.	Littlehales, T., Syracuse, N. Y.
Beardslee, C. S., Cleveland, O.	Landon, H. McK., Indianapolis, Ind.
Church, L., Flint, Mich.	Meagher, J. B., Mankato, Minn.
Cross, P., Detroit, Mich.	McLean, G., Dubuque, Ia.
Doan, J. P., Jacksonville, Ills.	Murdock, I. T., Lafayette, Ind.
Doty, P., Grand Rapids, Mich.	Nettleton, C. H., Derby, Conn.
Douthirt, W. F., New York city.	Quinn, A. K., Newport, R. I.
Duffield, J. C., London, Ont.	Rooney, J. W., Richmond, Ind.
Doherty, H. L., Madison, Wis.	Shattuck, J. D., Buffalo, N. Y.
Eastman, I. N., Monmouth, Ills.	Taylor, B., St. Paul, Minn.
Elles, E. J., Detroit, Mich.	Witherby, E. E., Lockport, N. Y.
Eysenbach, E., Columbus, O.	

Associate.

Bayles, J. C., East Orange, N. J.	Phillips, O., Detroit, Mich.
Collins, H. W., Detroit, Mich.	Ramos, J. E., Chicago, Ills.
Claybourne, C. W., Chicago, Ills.	Randle, F. A., Chicago, Ills.
Lloyd, E. F., Fort Wayne, Ind.	

Transfer from Associate to Active.

Dell, J., St. Louis, Mo.	Green, Jas., St. Louis, Mo.

Election of Mr. C. H. Nettleton to Honorary Membership.

The President—What is your desire respecting these applications?

Mr. Egner—I wish to move the election to honorary membership of one of the gentlemen whose applications for active membership have been read. I refer to Mr. Charles H. Nettleton, the Junior Past President of the American Gas Light Association.

Mr. Pratt—I second the motion.

The President—You have heard the motion by Mr. Egner to elect Mr. Nettleton an Honorary Member of the Western Gas Association.

The motion was put and unanimously adopted, applause accompanying the declaration.

Mr. Nettleton—Gentlemen, I thank you for your action, and wish to say that while the vote just taken was entirely unexpected to me, and that I am surprised by it, it is unnecessary to say that I am very much pleased.

Election of New Members.

The President—What is your pleasure as to the rest of the applications for membership?

On motion of Mr. Somerville the Secretary was instructed to cast the ballot of the Association for the election of those whose names had been mentioned. The Secretary subsequently reported that he had acted in accordance with the instructions, whereupon the President announced the result, and the President invited Mr. Wm. McDonald to introduce the new members to the convention, which he did in a few well-chosen words.

The Secretary then read the following:

Report of the Board of Directors.

The annual meeting of the Board of Directors of the Western Gas Association was held at 2 P.M. Tuesday, May 17, 1898, and was called to order by the President, Mr. James T. Lynn. The following members of the Board were present: James T. Lynn, Detroit, Mich.; Geo. Treadway Thompson, New York City; A. W. Littleton, Quincy, Ills.; Wm. McDonald, Albany, N. Y.; Chas. R. Faben, Jr., Toledo, Ohio; E. G. Pratt, Des Moines, Iowa; C. W. Blodget, Brooklyn, N. Y.; H. W. Douglas, Ann Arbor, Mich.; Jas. Forbes, Chattanooga, Tenn.; Jas. W. Dunbar, New Albany, Ind.

On motion of Mr. Pratt, the following papers were accepted for presentation to the Association:

"The Enrichment of Coal Gas," by Mr. George H. Harper, Altoona, Pa.

"The Use of Gas for Purposes other than Lighting," by Mr. C. W. Blodget, Brooklyn, N. Y.

"The Prepayment Meter," by Mr. C. H. Raynor, Adrian, Mich.

"Recent Developments in Texas of Interest to the Gas Man," by Mr. Thos. D. Miller, Dallas, Tex.

"Methods of Estimating the Values of Gas Liquors," by Mr. O. O. Thwing, St. Louis, Mo.

"The Igniting of Gas by Static Electricity," by Mr. Bankson Taylor, St. Paul, Minn.

"Wrinkle Department," edited by Mr. E. H. Jenkins, Buffalo, N. Y.

"Some English Correspondence upon Isolated Generators for Bench Firing," to be read by Mr. G. Treadway Thompson, New York City.

On motion of Mr. Blodget, a paper prepared by Mr. Frederick Egner, on the subject of "Hindrances to the Adoption of the Inclined Retort in America," was referred to Mr. Littleton to read, and, if found to be of the usual standard, to authorize its presentation to the Association. Mr. Littleton, after reading same, instructed the Secretary to notify Mr. Egner that his paper would be accepted.

The Secretary-Treasurer read the following report:

Receipts.

To membership fees	$180.00	
" annual dues	1,160.24	
" sale of badges	24.50	
" advanced membership fee	10.00	
" balance, cash on hand May 1st, '97	473.12	
		$1,847.86

Disbursements.

By Secretary's salary	$400.00	
" sundry bills, as per vouchers	614.85	
" balance, cash on hand, May 1st, '98	833.01	
		$1,847.86

Membership, May 1st, 1897		269
New members admitted, 20th annual meeting		18
		287
Dropped for non-payment of dues	14	
Resigned	3	
Deceased	3	
		20
Membership, May 1st, 1898		267
Badges on hand, May 1st, 1897		16
Sold		7
Badges on hand May 1st, 1898		9

On motion of Mr. Thompson, seconded by Mr. Faben, the Board voted to recommend to the Association that its proceedings for the last three years be printed in book form, which shall contain all the papers presented and the discussions following the reading of papers. And that, from time to time, as funds in treasury will warrant, to print further proceedings of the Association.

On motion of Mr. McDonald, the Board voted to recommend to the Association the adoption of the following amendments to the Constitution, submitted by Mr. Chollar at the annual meeting in 1897, viz.:

The amendment is that sections one and two, article one, of the Constitution be stricken out, and the following inserted in their place:

Sec. 1. Only officers and regular employees of gas companies shall be eligible for election to active membership.

Sec. 2. Any person who may be directly or indirectly connected with the gas industry, or who may be skilled therein, shall be eligible as an Associate member. Such members shall be proposed, balloted for and received in the same manner and subjected to the same fees and dues as Active members, and shall be entitled to all the privileges and courtesies of the Association, except the right to hold office; but Associate members may be transferred to Active membership by vote of the Association, upon the recommendation of the Board of Directors.

Also, that in section one, article four, that the words "vote or" in first line be stricken out.

Also, that in section one, article six, the word "Active" in the third line be stricken out.

The President appointed the following Committees:

Auditing Committee.—C. W. Blodget, H. W. Douglas, Geo. Treadway Thompson.

Applications for Membership.—Wm. McDonald, Jas. Forbes, C. R. Faben, Jr.

On Introduction of Visitors.—Wm. McDonald, Geo. G. Ramsdell and Jas. Forbes.

There being no other business the Board adjourned.

JAS. W. DUNBAR, Sec.

The President—You have heard the report of the Board of Directors. What is your pleasure concerning it?

Mr. Pratt—I move that it be received and adopted.

Mr. T. D. Miller—Does that carry with it the adoption of the amendment to the Constitution?

The President—I should say not. All in favor of receiving the report of the Board of Directors will give their assent by saying "Aye;" contrary, "No." It's is carried.

Mr. Donald McDonald—What becomes of the recommendations in this report that the proceedings of the Association for the last three years be printed in book form? Does the adoption of the report carry with it the ratification of that idea, and will it be done?

The President—The adoption of the report carries with it that recommendation.

Mr. Jenkins—I do not think we have *adopted* the report; we have *received* it.

The President—We have received and adopted all the report of the Board of Directors. The amendment to the Constitution of course is to be voted on separately afterwards. It is suggested you bring up this recommendation for adoption of an amendment to the Constitution, and have the Association vote on it.

The Secretary—Some of the members present seem to have an idea that perhaps in the adoption of the report and of the recommendations which it contains, the authority for publishing the proceedings was voted for under a misapprehension. I, therefore, move to reconsider that vote.

The President—It is moved and seconded that we reconsider the vote on the adoption of the report of the Board of Directors. (Carried.

Mr. Somerville—Now I move that the proposed amendment to the Constitution be adopted.

Mr. D. McDonald—I voted for that resolution because I would have all of the papers published; but as we all know that some of the discussion in the papers is at least superfluous, I suggest that some one should be delegated to sift the wheat from the chaff. In other words, to so eliminate unimportant matters from our proceedings that the published volume shall be a clear valuable book of reference.

Mr. Thompson—I would like to speak on this matter of the publication of the proceedings. I am very glad that the question arose as to the reconsideration of the vote on the adoption of the report of the Board of Directors, if there is any feeling that the adoption of the report carries with it the publication of the proceedings, and the expenditure of the money of the Association against the will, or without the unanimous consent of the Association as a body. I am sure that the feeling has always been that the Board of Directors was to voice the sentiment of the Association, and not to take action against the desire of the Association. The question of the publication of the proceedings has been before the Board in one form or other for the past five years; but the Association has not until the present year been in a condition financially where it could take the matter up in real earnest. It is now proposed to publish a volume somewhat similar in style to that which the American Gas Light Association has been publishing ever since its existence, and which shall contain the proceedings of the past two years and of the present year, and thereafter to publish a volume every two years; and as soon as the funds permit to go back and publish the proceedings of previous years. How often that will be possible remains to be seen. The scheme is somewhat embryonic at present, but will be carried out on as satisfactory lines as may be. The proceedings will be edited. There are, as you might say, a great many variations and side tracks into which discussions have turned, and some of the papers may be pruned judiciously, and that will be done. I think there is nothing else in which this Association could engage, or in which it could expend its funds to better advantage, and which would put it in a higher rank and give it better standing and greater coherency than this publication of its proceedings. I trust that the proposition will meet with the approval of the Association.

Mr. Forstall—While I do not want to say anything against this, I may say I hardly think Mr. Thompson and the other gentlemen of the Board of Directors fully appreciate what a peck of trouble they are laying up for themselves when they propose to do any extensive amount of editing the proceedings. Personally, I have not had any trouble, but I know that considerable trouble has arisen in other Associations from attempted editing of the proceedings. If everybody thought as the editors did there would be no trouble; but the very part that is cut out of a paper or from the discussion, is always believed to be the essence of the speaker's statement, and he is ready thereafter to annihilate the editor at sight. If there is any contemplation of going into a scheme of editing on an extensive scale that fact wants to be kept in mind.

Mr. D. McDonald—That trouble arises with reference to any paper which is published; but those people who happen to get their feelings hurt in that way are an insignificant number compared with those who really get the information they want. I would suggest that the papers be reduced in volume to such an extent that the funds of the Association will enable us to publish a larger number, and that the committee be authorized to go back further than three years, and to give us the valuable papers which have been read in a form where they will be more useful to us. A great deal of matter is read before the Association which is exceedingly useful for reference, but it is very hard to get it after it is once printed and put away.

Mr. Jenkins—I understand that the Board proposes to take up the proceedings of three years at this time—or more if they find that they can do so—and that next year they shall go back for another year or two and take that up. I agree thoroughly with Mr. McDonald, and I believe that the Association will agree with the suggestion that the proper thing to do is to get as much of the proceedings published each year as we can.

Mr. McDonald—Mr. Jenkins voices my idea exactly.

Mr. A. S. Miller—I do not think it would be fair for the Association to undertake to edit the papers. I have not done very much in the way of preparing papers for the Association, but any paper which I have presented has always been presented as a whole, or not at all; and I would like to say that if any paper which I have presented is to be edited, I would rather it would be left out altogether. I prefer to do my own editing. If the Association does not like a paper then I would take it out. The same is true as to the discussions. I do not think that any committee of this Association is properly capable of sitting down and editing the discussions and presenting the ideas the men had at the time of speaking. They will not look at the subject as he looked at it at that time, and as he presented it when he was on his feet. They cannot enter into the spirit of it as the speaker did when the discussion was in progress. I say, therefore, that these discussions ought to be presented, either as a whole, as the stenographer takes them down, or be left out altogether.

The President—Does Mr. Miller offer that as an amendment?

Mr. Miller—Yes; I would like to amend it by directing that the technical papers and discussions contained in these proceedings be published as a whole. There are certain reports which might be cut out; but when a paper is presented and discussed I think the paper itself and all the discussion had thereon should be published in full in the minutes. I offer as an amendment that no papers or discussions be edited.

Mr. Egner—If the proceedings of this Association are to be published we want the proceedings as they were. The papers, before being presented to the Association, have been carefully read by some one of the Board of Directors. I am entirely of Mr. Miller's opinion—that they should be published as they are. I also think that all the discussions at our meetings, as they have been reported and approved, should be published, or else that no part of them should be published. Either don't do it all, or do the whole thing. We have already approved of them, therefore let us publish what we can, or do not publish at all.

Mr. A. C. Humphreys—In discussing this matter we should bear in mind that there is a sharp distinction to be drawn between a paper which has been carefully prepared, deliberated over, and written out and the discussions thereon, which often come up in a more or less haphazard way. I do not imagine that Mr. Miller's argument is that we should not be allowed to make any verbal changes. Possibly the matter could be even then properly taken care of, in the future anyway, by having the members revise their parts of the discussions before the meeting is wound up; but it does seem to me that each member should have the privilege of deciding for himself what he is going to say or what he has said. I for one certainly would never permit any paper of mine to be edited by anybody. It is for me to say what I am going to give out on a certain topic. I may get upon my feet and say exactly what I do not want to say; but even then I have the privilege of going over it and giving a proper expression of what I had in mind. I do generally succeed in giving such an expression to my views when I speak; but as to giving any committee authority to cut that paper up and re-edit it seems to me absolutely beyond the province of anybody or Board of Managers.

Mr. D. McDonald—I hope what I have said will not be misunderstood. I entirely agree with the proposition that technical papers should be published without change. That is the reason why I favor the leaving out of a great mass of perfectly irrelevant matter introduced in our proceedings. Anybody who will take the trouble to go over the proceedings as published in the various GAS JOURNALS will see that a great deal of the matter is as worthless for preservation as are the daily happenings chronicled in the press from day to day. My idea was to make the volume more valuable by cutting it down—not the technical papers or discussions, but other matters which really have no value to us for reference or preservation.

Mr. Shelton—I think that Mr. Humphreys and Mr. Miller are speaking about one thing, and that Mr. McDonald has an entirely different matter in mind. Mr. McDonald desires to cut out the complimentary matter. He did not say anything about cutting out papers or discussions; and I do not think that anyone assumes that will be done. But in the matter of complimentary speeches, I quite agree with Mr. McDonald. I think that the elimination should only apply to compliments, pleasantries, votes of thanks, and all that sort of thing, which have no technical value at all.

Mr. A. C. Humphreys—I was not in any way replying to what Mr. McDonald said; I was simply replying to what I understood to be the final statement of Mr. Thompson—that the papers would be "edited."

Mr. Thompson—That is an instance of the point which Mr. McDonald has made. I spoke carelessly, and my remark did not express what I really intended to say. I should have said that the discussions—not the papers—were to be edited. I thoroughly agree with Mr. Miller and Mr. Humphreys that the papers which had been prepared for presentation at these meetings, and which have been read and approved by the Board of Directors before becoming a part of our proceedings, should not be changed one iota. We have accepted them, they have been read, they have become part of our history, they are a part of our proceedings; but there are many things said in the discussions which can profitably be left out. I do not believe in altering the words or the sense of anything that any member has said; if it was not deemed relevant, let it be left out altogether. I think that the committee, whoever they may be, may be trusted to exercise sufficient discretion, and to do their work to the satisfaction of all. I call for the question.

Mr. Shelton—I would like to offer the sugestion that if this printing is to be done, the resulting books shall be made, as far as possible or practicable, of the same size as the volumes of the proceedings of the American Association, so that those who desire to preserve the volumes will have the greatest convenience in arranging them on their book shelves. I make that as a recommendation or suggestion to the committee.

The President—You have heard the motion.

Mr. D. McDonald—I do not think there is any motion before the house at present. I was going to move, and in order to get the matter properly before us, I do move, first, that the committee be authorized to make the publication which they have recommended; and, second, that in publishing the proceedings of this Association all technical papers be published in full, but that the committee be authorized to cut out matter which is not relevant to the subject under discussion.

The President—You have heard the motion. As many as favor it will say "Aye;" those opposed, "No." The motion is carried. What is your pleasure as to the balance of the report of the Board of Directors?

The Secretary—I move that the report be received. The vote on the proposition to amend the Constitution will be considered this afternoon in regular course. (Carried.)

Mr. Ramsdell—I would ask if that report has finally been adopted?

The President—No; it has been received.

Mr. Ramsdell—Then, in order to get it out of the way, I move that the Report of the Directors, with the exception of the recommendations as to the Constitutional amendments, be adopted at this time.

Mr. Miller—I second the motion.

The President—All in favor of adopting the report of Directors, with the exception of the part which relates to the amendment to the Constitution, will give their assent by saying "Aye;" contrary minded, "No." It is carried; the report is adopted.

Mr. Thompson read the report of the Auditing Committee which was, on motion of Mr. Somerville, received and placed on file.

The Association then took a recess until 2 P.M.

[To be Continued.]

[Prepared for the JOURNAL.]

The Pintsch Gas System To-day.

By MR. F. H. SHELTON.

That a form of gas known as Pintsch oil gas, compressed and carried in cylinders, is extensively used for railway car lighting, is known to most gas men. Few gas men, however, are acquainted with the details and merits of the system, and especially are gas men unfamiliar with the volume of business quietly and unobtrusively done by it.

Few realize, for instance, that to-day a system of 40 works, located at all of the principal railroad junction points, and stretching from the Atlantic to the Pacific, is operated by the Pintsch Company; that some of these works make a volume of gas having a lighting effect equal to an output of a third of a million cubic feet per day of ordinary gas; that one at least has a system of 30 miles of distributing pipe, feeding 28 railroads attached to it, and that collectively they supply upwards of 1,200 Pullman, 500 Wagner and 9,100 day coaches in connection with about 110 different railroads, aside from gas also used for purposes other than train lighting. Yet these are facts.

In the aim to secure the best means for car illuminations, systems innumerable have been tried. Electricity, on the surface attractive, has yet been found wanting. Storage batteries are enormously cumbrous and heavy. Dynamos are effective only while cars are coupled to the locomotive. Both plans are highly expensive. Kerosene is cheap, nasty and inefficient. Gasoline, while cheap, is but moderately efficient and has grave objections. The reservoirs cannot prudently be filled under train sheds, or with passengers about, owing to risk of fire or accident. Gasoline systems have relatively made but little headway. Ordinary city illuminating gas, compressed, is "lean," and but partially satisfactory. It has remained for the Pintsch oil gas system to successfully meet all the requirements of an efficient, simple, reasonable, cheap, safe and practically perfect service. This system covers, in brief, the use of a pure, uniform, high candle power oil gas, stored at high pressure in tanks underneath the car; the use of a practically perfect regulator for reducing the pressure of this gas to normal burning pressure within the car, and the use of a lamp within, in which to burn the gas, so designed that draughts, vibration or motion shall not affect the flames.

Each point is essential, and it may be said of the Pintsch system as a whole, that its success has been achieved because of perfection of each point, and the nice balance of each part, constituting the whole. A further pleasing point to be noted in this view of the system is that its efficiency and success have dated from its beginning.

For the purpose of describing a typical Pintsch gas producing plant the one at Washington, D. C., is taken. Constructed about a year ago, it is entirely representative of the 40 Pintsch gas works in this country with which illuminating gas men are generally so unfamiliar. A lot, about 50 by 80 feet, contains the entire plant. One brick building, about 30 by 50 feet, houses all of the machinery. A blank wall divides this building into two rooms of unequal size. The larger, perhaps 28 feet by 30 feet, contains the producing benches proper, a 50-horse power vertical boiler, and the coal, oil and dirty end of the works, so-to-speak, although the term is but relative, and really inappropriate, as the whole plant is eminently clean and unobjectionable throughout. The benches are in a stack of four in the middle of the room, and are each about 4 feet in width by 6 in height and depth. Each contains 2 cast iron retorts, one over the other, measuring perhaps 10 inches by 10 inches by 6 feet. In these a pure oil gas is distilled (from almost any grade of oil preferred), of about 75-candle power, at the rate of 3,000 to 4,000 feet per bench per shift of 12 hours. Stand and dip pipes and hydraulic mains connect with the retorts in the rear, and from them the gas passes to an upper adjoining room, where it is cooled in an ordinary 4 feet vertical, cylindrical water tube condenser, is "washed" in a water bath in a flat rectangular iron box, some 4 feet square, is purified by lime in two conventional purifying boxes, each 5 feet square, is measured in an ordinary 42 inch station meter, and finally is temporarily stored in a holder of the usual type, of 3,000 feet capacity, located adjacent outside. So far, while the benches are of Pintsch design, the general process is purely that of an exceptionally well-equipped and regulated 6-inch oil gas works. Beyond this point, however, the Pintsch system is more obviously in evidence. In the smaller of the two rooms are also two steam gas compressors, one for action, one for reserve, for railroad companies will brook no interruption of service. These are of the ordinary horizontal balance-wheel type, with steam driving cylinders at one end, the gas compressing chambers at the other.

The purified, finished 75-candle power gas, that has been stored in the holder at the ordinary pressure of 2½ inches, is drawn back by these compressors and pumped into two steel high pressure storage cylinders, also adjacent outside, at a pressure of 160 to 200 pounds to the inch, in which operation about 10 per cent. is lost in volume and 8 to 10 in candles, and a gallon of liquor is recovered. From these cylinders delivery pipes run to the station platforms where hose connections are readily made to the individual tanks on each car, for filling as needed. Distance to these stations makes no difference, as the gas has 200 pounds pressure back of it, insuring delivery. In Washington, for instance, the gas plant is located in the 14th street yards, quite by itself, a mile or more from either the B. & O. or the P. R. R. stations. The pipe used for connecting is X X, 2 inch.

In the compressing operation all vapor and moisture are completely thrown down and intercepted at the works, with the convenient result that there are no connection troubles and no drips to look after on the outside. All pipes are entirely "dry," so-to-speak. Outside of the above described equipment, at the works are a couple of ordinary oil tanks, a coal shed, a tar well and an engineer's office.

Railroad companies are in the transportation business, not in the gas business. They want to get the gas service, and as a rule do not want to be bothered with looking after the plant. This has, therefore, resulted in the general arrangement that the Pintsch Company, under contract, not only builds and operates the works and supplies the gas, but also supplies all the regulators, tanks, lamps, piping, gauges and other equipment necessary for a complete service. As a result the Pintsch Company thereby becomes responsible for and gives a uniform and satisfactory service. As the lamps and regulators are an important and integral part of the system, this is a natural, proper and convenient arrangement, and gives a uniformity and satisfaction of results impossible if the railroads used a miscellaneous lot of burners, regulators, etc.

The efficiency of the Pintsch governor is little short of marvellous. On one side the pressure may be and is anything from 200 pounds down to half a pound. On the other, this pressure is cut down to but 1.4 inches, the pressure that the gas is usually burned under, within the car. That the governor does do this work surely and accurately is easily in evidence to any traveller who reads under the light of the burners, burning at obviously ordinary pressure, and who yet will take the trouble to step outside the car and note the 100 or more pounds pressure on the tank gauge underneath. And this efficiency is attained irrespective of jar, vibrating or temperature. Of the scores of forms of gas governors made or proposed, but few indeed even approach such perfect working.

The lamps themselves are equally perfect. Despite speed, vibration, jar, draught or weather, they are perfectly steady—motionless, odorless, smokeless, noiseless, shadowless. The standard form is the 4-light cluster, 40 candle power, made up of four ¼-foot flames of 10 candle power each.

Pintsch gas is sold to the railroad companies at the rate of 85 cents for each standard tankful, of 167 cubic feet. The tanks are about 9 feet long by 20 inches diameter. The quantity of gas that can be carried in each is directly in proportion to the pressure to which they may be charged. One tank will usually run a car two nights, covering thus the usual round trip, enabling refilling at the home station. Longer runs of course involve refilling en route.

Of car lighting by gas, Mr. Geo. H. Daniels, General Passenger Agent of the New York Central & Hudson River Railroad, is quoted as follows:

"The Pintsch system of lighting has become justly celebrated, and is recognized as the safest and most satisfactory method of car illumination ever produced. This clean, brilliant and beautiful light has been introduced into the coaches of the Wagner Palace Car Company and into those of the New York Central & Hudson River Railroad. In cars so lighted passengers can read their books and papers with the same degree of comfort as in their drawing rooms at home."

Mr. J. N. Alhausen, General Superintendent of the Central Railroad of New Jersey, when speaking of the Pintsch system, said: "I have no hesitation in saying that, as far as my experience goes, I consider it the best light in existence for illuminating railroad cars;" and Mr. E. L. Lomax, General Passenger Agent of the Union Pacific Railroad, said:

"The Pintsch system is alone in its perfect completeness. This light fulfils all required conditions, leaving nothing to be desired, and there has been nothing left undone to make it the most perfect light yet devised for this branch of commerce."

Many other statements made by prominent railroad officials, telling of the excellence of this light, could be quoted from, but the best evidence of the satisfaction that results from its use is found in its general adoption by all the principal railroads of the country.

Having conquered the lighting part of the railway business, the Pintsch people have also gone into cooking. Outside of dining cars, the only meals heretofore available to the traveler, in the ordinary buffet service, have been the time-honored tinned "Chicken a la Marengo," with variations, reheated over a kerosene stove. But the traveler who takes, for instance, the "Empire State Express" or certain "Shore Line" trains in the East, can now enjoy fresh steaks and chops, cooked to a turn (by the same gas that lights the car), in a gem of a buffet stove designed for the purpose. Four cents worth of gas per hour cooks a portion every ten minutes, besides heating other parts of the stove for boiling purposes, etc.

The unqualified success of Pintsch gas in railway lighting has led to its adoption in similar lines. The elevated railroads of New York recently abandoned kerosene and equipped about 1,100 cars with Pintsch lamps. The progressive surface cable, and even some "underground trolley" roads in New York, have also largely adopted it. In the streets of Buffalo and Washington, etc., may be seen portable post offices, in the shape of an omnibus, with clerks busily engaged in city district work, in sorting mail under the light of two Pintsch lamps, as the

horses pull them from point to point. The gas for the lamps is carried in two small cylinders on either side, not modestly but proudly, the cylinders being labeled in gold letters, "Pintsch Light." And out at sea the marvelous Pintsch governor may be seen at numerous points in our harbors, the government having installed about 40 gas-lit buoys in the recent past. These are floating Pintsch, gas-filled hollow steel tanks, the burner being mounted in a cage protected lantern on top. Despite wind, storm, temperature or motion, the lantern and governor together burn and work faithfully and surely for eight months at a time without any attention whatever, or until a new gas supply is needed.

The peculiar success of the Pintsch system, aside from the governor, lamp and uniform quality of gas made, rests in the fact that oil gas *per se* stands compression and expansion with but a small loss in quality or candle power compared with ordinary gas.

Originally made of 75 candle power, the loss of 8 or 10 candles, due to compression, still leaves 65 available, and is but a small per cent. compared with the same loss in candles when a city gas is used. In this latter case a 20 candle power gas reduced to 11 or 12 leaves manifestly but a most indifferent service or light value, and the advantage of carrying in a given limited space a Pintsch gas of six times the lighting power of compressed city gas is obvious, to say nothing of the fact that the cost is less.

The Pintsch system to-day stands unrivalled in its field of work. After the severest competition with every system of car lighting that could be thought of, it has emerged and stands head and shoulders above them all. This is the well earned result of the perfection of each part, the system as a whole and the policy of doing one thing well. Its large and substantial business is a well won and deserved result, and must be as gratifying, alike to the company as it is to gas men at large, believers in gas as a superior illuminant.

Laying Submerged Water Pipes Across the Passaic River.

Engineering Record says that a recent contract of the New York & New Jersey Water Company included the delivery of from 15,000,000 to 17,000,000 gallons of water a day to Bayonne, N. J., through several miles of 30-inch pipe, under a maximum head of 130 pounds. The riveted steel pipe was from ¼ to ⅜-inch thick, made in telescopic sections of two alternate sizes, each composed of a single sheet of steel, lapped jointed, with single transverse and double longitudinal rivet seams. Cast iron pipe was used for curved sections, and for the submerged crossing of the Passaic river. At the river crossing the 30-inch pipe was replaced by 2,000 feet of two 18-inch pipe laid in sections 11 and 12 feet long, and connected with both Wood & McNeil flexible joints. These pipes were rigidly braced about 6 feet apart, by permanent struts between them, and were laid in a trench, dredged from 4 to 12 feet deep in the bottom of the river, where the water varied from 5 to 35 feet in depth, and a clearance of 12 feet had to be maintained above them for navigation. A large flat boat was secured to four anchors by lines operated by a warping engine which enabled the position of the scow to be changed at will. From the rear end of the boat an inclined platform about 70 feet long was built with its lower end resting on the bottom of the river, in the line of the dredged trench, and the upper end hinged to and projecting just above the stern of the scow, the axis of the incline and that of the scow being coincident. The incline was built of 4 by 12 inch longitudinal oak plank, laid flatways, to make a platform 8 feet wide, at each side of which a plank was laid edgewise to stiffen it and form a trough, while other transverse planks were spiked edgewise across the under side to form cleats or floor beams.

On the upper side of the floor were laid parallel strips of steel plate 2 feet wide and ½-inch thick, extending the whole length of the incline, each one having its center 3 feet from the center of the trough, so as to form a smooth sliding surface for each of the two pipes. The latter were assembled with their cross-pieces, and the flexible connections made on the deck of the scow, before they were lowered down the incline to the bottom of the river. When an additional section was connected to the top of the pipe, at the upper end of the incline, the scow was moved forward a few feet so as to draw the incline out from under the pipe and allow the lower portion to settle into the required position in the trench. This provided space for connecting another length of pipe on top, when the boat was moved forward again, and so on until the pipes had been carried completely across the river, after which the trench was back-filled with a covering of clay. One barge, one tug and a crew of about 16 men were required, and one section of pipe was fitted, caulked and laid daily. Mr. E. C. Peck, of Flushing, New York city, was the engineer in charge, and the work was executed by the Hydraulic Construction Company, of Manhattan, New York city.

Electric Distribution at the Baldwin Locomotive Works.

Mr. George Gibbs, in a paper read before the New York Railroad Club, on the topic of the "Electric Distribution of Shop Power," gave this data in the instance of such distribution of power at the plant of the Baldwin Locomotive Works, Philadelphia:

Electric power was first introduced in 1890, when the new erecting shop was built, and was installed especially for the purpose of driving two 100-ton capacity cranes. These are of 75-foot span and cover, in two aisles, the entire area of the shop, 150 by 350 feet. They are each run by a 50-horse power motor, belted to the driving clutches. An immediate saving of 80 men in the laboring force was effected, due to increased facilities afforded by these cranes. The possibility of this result will be seen when we consider that one of these cranes is capable of lifting an entire locomotive, as well as the component parts of the same, thus allowing the various operations of erection to be carried on without mutual interference in the least possible space, and avoiding entirely the immense manual labor connected with the lifting of heavy parts, and delays consequent thereto. A number of portable electric drilling outfits were also introduced in this shop, with a corresponding reduction in hand drilling work.

The next step taken was the remodeling of the wheel shop. This had been driven by the ordinary method of line shafting and work handled at the lathes, etc., by hand jib cranes. This necessitated a heavy roof and precluded the effective use of overhead lighting, on account of the mass of timbers, shafting, pulleys, belting, etc. The shop was, consequently, very dark, and much space was wasted in two long main aisles the entire length of shop, for handling the work in and out of machines. The laboring force amounted to about 40 men, and it required 6 men and 30 to 40 minutes' time to unload and reload the large wheel lathes.

In the new shop, occupying the same area, electricity was used for driving, each machine having its individual motor. A traveling crane was erected, spanning the entire floor, about one-third more machines were installed and skylights were introduced in the roof trusses, thus making the shop one of the lightest and most cheerful possible.

The handling by crane enabled a reduction in laboring force to about one tenth of that previously required—from 40 down to 4 or 6 men. Two men suffice to operate the crane, one at the levers and one at the hook. Moreover, a machine can now be unloaded and reloaded in five minutes with ease, largely economizing the time of the workman and increasing the capacity of the tool. A considerable reduction in power requirements has also followed the introduction of electricity in this one shop. The shafting method required 150 horse power at the engine, whereas there is seldom registered now more than 80-horse power at the switchboard, notwithstanding the addition of the crane and many more machines.

Similar results have followed the introduction of electric driving in their frame shops, which constitutes really an extraordinary example of the ingenious application of electric distribution for bulky material to be handled and worked in restricted space with very low headroom. By application of individual motors to the tools the headroom was cleared for three short, spare, compactly built traveling cranes, which operate successfully in a vertical space thought entirely insufficient until seen. The shop has thus been converted into a handily arranged and light one, and the laboring force reduced 50 per cent. over old practice.

In the new boiler shop, electric driving has effected similar economies in time, space and cost. All tools are here driven by individual motors, and all plate and boiler handling done by electric cranes. The same remarks apply to the new tank shop. This shop is located nearly half a mile from the power house, which would have necessitated a separate boiler and engine plant had steam driving been used.

Lest the foregoing may be cited as illustrating the benefits of the use of traveling cranes, and not of electric power transmission, I may say that in every case, except that of the erecting shop, the use of the crane was made possible only by electric driving of the tools served by it, and, moreover, in no case, except that of this same shop, is it possible to drive the cranes themselves by any other method.

Extent of the Plant.—The works have now installed 215 motors, rated from 2 to 50-horse power each, and averaging 9-horse power each for the entire number. The aggregate horse power in motors is, therefore, 1930. The total generator capacity installed is 700 horse power,

and the daily average horse power at the switchboard is about 570, which is fairly constant throughout the day.

Power Required by Tools.—The following table is appended, giving a partial list of the kinds of machines operated by individual motors, with the amounts of electric powers supplied the motors under different conditions of operation :

Tool.	Kind of Work.	Cut.	Horse Power Required—Empty.	Horse Power Required—Light Load.	Horse Power Required—Full Load.	No. of Cutters.
70 inch wheel lathe	Wheel center.	Light.	....	4.4	7.9	2
	32-inch wheel center.	⅛-inch deep.	....	4.7	5.8	2
	56-inch wheel center.	....	1.5	5.2	6.2	2
Horizontal lathe	56-inch wheel center.	⅛ inch deep.	....	4.3	7.1	1
Slotter 18 inch stroke	Frames.	Heavy.	2.3	5.0	10.3	1
Large double frame planer	2 frames	⅛-inch deep.	11.0	....	21.6	2
Slotter 12-inch stroke	Wrought iron 6 inch thick.	....	1.5	2.1	6.5	1
36-inch planer	Frames.	....	3.4	4.2	7.4	1
	Frames.	....	3.4	....	11.3	2
Drill press	1-inch drill, wrought iron.	....	0.97	1.94	2.9	1
	1¼-inch drill.	....	0.97	1.92	2.2	1
	2¼-inch drill.	....	0.97	1.94	2.85	1
Boiler plate shears	⅝ inch steel plate.	....	3.5	6.0	19.0	1
Boiler plate rolls	Steel plate 1¼-inch thick by 10 feet 6 inches. Long in shears.	....	4.5	14.4	19.8	..

Repairs.—The force of workmen needed to keep up all line repairs, inspecting and repairs on the 215 motors, and on ten arc dynamos and four generators, consists of two men, with one-third of the time of another. One of these men alone keeps up repairs on armatures. The labor cost will thus average $6 per day, and the new material consumed in repairs is estimated to cost about $2 per day. The total labor and material cost per year is therefore about $2,500, or about 4 per cent. on the first cost of the plant. Expressed in another way, it has been estimated roughly that the reduction in amount paid out for new belting and belting repairs since the introduction of electric driving, is sufficient to pay for maintenance of the motors.

Manner of Connecting Motors.—A word may be said regarding the practice at these works. Group driving is employed for small tools, by belting from a motor to a line shaft. Individual driving is used for large and for isolated tools, or where cranes make shaft driving inconvenient. The attachment method in latter cases is somewhat peculiar and may at first sight strike one as a makeshift; a knowledge of electrical machinery will, however, convince an observer that there is good, practical, mechanical sense in it. It consists in supporting the motor upon a light iron framework bolted to the machine, this same framework serving as support for the cone pulley countershaft. The motor is then belted to the countershaft, and the latter to the machine, as usual. This arrangement allows of variable speed with belted connection to the motor, without electrical complications of variable speed motors, and an elastic connection between the motor and the cutting tool. Details are, of course, modified in carrying out the scheme, but in general the method consists in belted rather than geared motor attachment.

Two facts will be sufficient testimony that in this important quality electric distribution of shop power is satisfactory. They are : 1, The small repair account above cited; and 2, the fact that the electric plant in these works is being constantly extended.

Petroleum Fields of California.

According to the Mining Bureau of California the production of petroleum in Southern California during 1897, may be thus summed up :

	Barrels.	Barrels.
Los Angeles County—		
City of Los Angeles	1,073,011	
P. C. O. oil, Newhall	145,000	
Puente	95,000	
Central Oil Co., Whittier	14,000	
Santa Fe Railroad wells	12,000	
Total, Los Angeles County		1,339,011
Ventura County		368,228
Santa Barbara County		130,136
Total South, California		1,837,429

The output of the Coalinga field, in Fresno county, for 1897 is said to be 70,000 barrels. Adding to this the output of the Moody Gulch wells, in Santa Clara (about 50,000 barrels), brings the total amount of petroleum in California in 1897 to nearly 2,000,000 barrels, an increase of about 750,000 barrels over 1896.

The wells in the Eastern field within the city are beginning to fall off in production, and oil men are looking around for new fields to conquer. Prof. W. L. Watts, field assistant of the State Mining Bureau, who has being doing much hard and conscientious work in the Southern California oil fields during the past year, gave the following interesting hints regarding the formation and probable future trend of the Los Angeles oil field.

"At the western extremity of the old field the formation shows disturbance, and the angle of the dip ranges from 40 to 50°, which is in keeping with the surface indications. Further eastward the formation is more regular, and the angle of the dip decreases. At the Second Street Park more geological disturbance is manifested, the angle of the dip increases and the strike is irregular, the cause of the disturbance being a crossfold which crosses Court street, near Douglas. Further eastward the formation becomes more regular until the eastern extremity of the field is reached. There the trouble again commences, the cause being a crossfold or faults, or both. Along the northern edge of the field the angle of the dip is less than some data I previously obtained had led me to suppose. Indeed, if this low angle was maintained to the north of the most regular portion of the field, the oil line may extend much further to the north than it has yet been developed. There may, however, be faults or disturbances in the formation which might render such calculation misleading. I will here say that my calculations are based on the depth at which the first stratum of oil sand has been struck.

"In the new oil field the formation is more irregular and the angle of the dip is less than it is in the old field, the most regular portion being the center of the field extending from the Sisters' Hospital toward the corner of Bernard and Yale streets. Along this line the angle of the dip lessens until at Yale street it is only 10°. Going east of Yale street the surface of the oil sand appears to be at first undulating, and then more violently disturbed. In the eastern extremity of the field this disturbance is particularly well marked.

"In the northeast corner of the new field the immediate cause of the disturbance appears to be a fault which can be seen at the corner of Bernard and Adobe streets and in Chavez ravine, and probably extends thence along this line to the corner of Hintin and Beaudry avenues, where the formation for a short space dips to the north.

"Without worrying about any further technical details, we are justified in arriving at the following conclusions: The strike of the oil sand in both fields is about N. 85°, W. This being the case, and eliminating any idea of a twist in the formation as impossible, we can only account for the relative position of the oil sand in the two fields by the following structural conditions :

"1st. That it may be occasioned by a gravity fault running in the direction of the dip of the formation.

"2d. That it may be occasioned by a gravity fault running in the direction of the strike of the formation.

"3d. That it may be occasioned by there being oil-yielding strata underlying those which have been struck in the Second Street Park oil field.

"If the first hypothesis is true, there is no extension of the eastern end of the old field, nor the western end of the new field. This is the least probable of the three explanations.

"If the second or third hypothesis be true, the strike of the formation would carry the oil line in the new field beneath the Sisters' Hospital, toward the corner of Edgeware road and Temple street, running parallel to and north of the oil field. There would also be an oil line running east from the old field toward the corner of Alpine street and Bunker Hill avenue.

"Running our eye over the map, we find that the strike of the formation, if prolonged to the westward from the new field, would carry the oil line to the Maltman wells and from the old field to a point a

short distance south of the Baptist College. Between these points, however, there is a stretch of country where the geological structure is obscure. The abnormal flatness of the exposed rocks to the north of Frst street and west of Burlington avenue, and the lack of success attending such wells as have been drilled between Second Street Park and the Baptist College, demand great caution in expressing an opinion concerning further prospecting between the places named.

"There is one part of the country which seems to deserve more attention than has been paid to it. I refer to the country west of the Baptist College.

"Turning to the southeast we find that the strike of the formation would carry any eastern extension of the new field across the river, a short distance north of the Main street bridge, and thence toward the reservoir south of Alhambra avenue. It is hardly likely that all the territory I am naming will be productive, but these are the lines in which to prospect. There is one thing which I have previously drawn attention to, and which my recent investigations emphasize. It is this: The low angle at which the strata dip calls for a wider oil line than has hitherto been developed. The lack of success which has attended most of the wells in the northern margin of the old fields is probably due to lines of geological disturbance, some of which are noticeable in the exposed rocks.

"Just how much figure these lines of disturbance cut is at present an unknown quantity. It is probable that there are other oil lines in Los Angeles besides those already developed. For instance, it is not improbable that one extends with a strike of about 80° east from Brooklyn Heights. There is probably another one extending with a similar course through the territory on which the Mackintosh well is situated north of Bellevue avenue, near Reno street."

SPECIAL ENGLISH CORRESPONDENCE.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, May 10th, 1898.

The New Welsbach Burner.—An Acetylene Show.—Carbureted Water Gas at Middlesbrough.

Last month I alluded to an important improvement that had been announced by the Welsbach Incandescent Gas Light Company. A private exhibition of the new appliance was opened in London last week, and many members of the gas fraternity have availed themselves of the courtesy afforded by the Company and inspected the new burner. An elegant and spacious show room has been fitted up with all kinds of appliances, both for indoor and outdoor lighting, several samples of the naked light, with or without mantles, being also shown, also experimental meters, pressure gauges and appliances for testing the consumption of gas; but the visitors were left to unaided vision for photometrical results. The new burner is made in five sizes, ranging from a consumption of 1 to 5 cubic feet per hour, and the lower sizes are very much smaller than the ordinary 3½ cubic foot Welsbach, the area of the mantle being approximately in proportion to the amount of gas used. By this means two new features, both of a very important character, are claimed to be obtained. In all previous makes of burner the smaller sizes are not so effective as the larger. But in the new Welsbach the efficiency is the same for all sizes. When the pressure is set at the lowest practical limit, say, 6 to 8-tenths, 25 to 30 candles per cubic foot of gas consumed per hour is the duty obtained, or about twice that of the ordinary Welsbach. The second feature is that, whereas with ordinary burners an increase of pressure means loss of light, and, therefore, waste of gas, with the new burner a rising pressure, while of course increasing the quantity of gas consumed, means also a more than proportionate increase of efficiency. A 20-tenths pressure applied to any ordinary make of burner would be a considerable waste of money, but applied to the new Welsbach it means a duty of no less than 35 candles per cubic foot. This feature can be developed to any practical extent, and a dark room was shown, in which were fitted three or four of the large size burners, supplied with gas under a pressure of about 20 inches of water. The effect was simply dazzling, and evidently all the advantages of the electric arc can be furnished by this means, at a comparatively small cost for gas. Another point, in respect to which there is room for some difference of opinion, is the claim that the new burner can be used without a chimney. The cylinder chimney has a great deal to answer for. It could scarcely be called a practical success until the new Jena make was introduced. After allowing for errors in respect to length in air supply, a considerable margin remains in the way of obscuring the light and injuring the mantle. But it is not necessary to use a cylinder with the ordinary make. The bulb shape gives very good results, especially for street lighting. As there is no improvement in the mantle, the same make being used as before, it is not very evident where any advancement under this head comes in. I have been using six Denayrouze burners throughout the past winter for street lighting, and consider the mantle to be of such a fragile character as to render protection of some sort an absolute necessity. The smaller sizes, however, will lend themselves readily to artistically designed shades of a small, light and delicate kind, similar to those adopted in connection with the electric incandescent light, or to imitations of the vacuum bulb. Particulars as to the price at which the new burners are to be sold are not yet published, but it is to be hoped that the Welsbach Company will avoid the mistake that was made in connection with the ordinary burner, of claiming an absurdly high price. The ordinary consumer is not inclined to face much outlay in the matter of improved gas burners. He cannot see why one burner should not be the same as another. Such a course, therefore, not only hampers genuine business, but is at the same time a challenge to the cheap imitator.

With the efficiency of 30 candles per cubic foot from ordinary coal gas, the prospects of acetylene gas coming into active competition with the ordinary gas supply receive a considerable remove backwards. Like most other things, however, acetylene has its uses. A spirited endeavor in the way of advertising this new process is to take place in London, in the shape of an exhibition of acetylene generators and burners, which is to be opened at the Imperial Institute on the 1st prox. It will be conducted under regulations determined by a committee appointed by the Society of Arts. The generators will be grouped under three classes, the first including apparatus in which water is allowed to drop or fall slowly from above upon a mass of carbide; the second, in which the water rises from below the carbide; and the third, in which pieces of carbide drop or fall into water. And they are further subdivided into automatic and non automatic generators. In the first, the storage capacity is less than the total volume that the full charge of carbide is capable of producing, so that reliance is placed upon some device for stopping the generation of gas, when the consumption ceases, or for regulating it in proportion to the consumption. Apparatus belonging to the second subdivision includes a gasholder capable of storing the whole product of one full charge. Several conditions are laid down, such as that no generator shall under any circumstances be capable of generating or accumulating in any part a pressure exceeding 100 inches of water, or cause or give rise to excessive heating. The air to be displaced, when first starting from the interior of the apparatus, shall not exceed one-fifth of the total producing capacity in the automatic machine, and shall be as small as possible in the iron non-automatic producer.

There must be no "large" escape of gas under normal circumstances of working, and a safety seal or outlet must guard against accumulations of pressure that may be caused by the blocking of the outlet. Intended exhibits will be examined by the committee previously to being accepted, and if not found satisfactory in these points will not be admitted to the exhibition. Arrangements will be made for the regular supply of calcium carbide, and each apparatus is to be maintained in working order supplying acetylene gas through a separate service to its own special set of burners. A daily record of working will be kept in accordance with directions to be laid down by the committee, and a report will be issued on the results of the working. The show will be open for three months, and longer if desirable.

The display will be interesting as an example of how many different ways there are of killing a cat. And it will probably be successful in drawing specimens of every apparatus on the market, as a maker with any kind of connection cannot afford to lose the valuable advertisement afforded by obtaining a certificate that his apparatus conforms to the regulations and is eligible for the exhibition. Such a certificate is almost a practical guarantee of safety, and the apparatus that has received one is placed at an immense advantage over one that is uncertified, simply by reason of not being submitted to the testing committee. Gas engineers will look with interest for any practical information as to make per pound of carbide, labor and maintenance of apparatus, actual illuminating power of the gas in practice, etc., that may be included in the promised report.

An important paper on the "Adoption of Carbureted Water Gas" was read by Mr. D. Terrace, of Middlesbrough, as a meeting of the North of England Association of Gas Managers which was held a week or two since. The author not only expressed very high approval of the process, but confirmed his opinion by actual working statistics from his first season's experiences. So far from his views being called into

question they met the general approval of the meeting and it was apparent that, apart from the question of the cost of manufacture as compared with the ordinary coal gas process, the new system possesses special characteristics that render it a desirable adjunct to the resources of any gas engineer. The author showed that as compared together on the item of ground space required, his water gas plant occupied only one fifth the area that would be required for a coal gas plant of similar capacity. The advantage of this, where extensions are absolutely necessary and land costly or absolutely unobtainable, are obvious. In many instances it means staving off an application to Parliament for many years.

In respect to actual capital expenditure, water gas again scores heavily, it being calculated that one-third of the cost of coal gas plant is enough. As to holder capacity, a saving of something like 50 per cent. is claimed. Mr. Terrace has, during the past winter, repeatedly supplied up to twice his storage capacity within 24 hours. Unlike retorts and furnaces, the water gas plant can be made to vary considerably in its production according to demand, without detriment to the wear and tear. Used as an auxiliary to coal gas, it not only takes care of all the variations due to local or meteorological circumstances, thus enabling the retorts to be run at that even pace to which they are best suited, but also gives complete control over the illuminating power, leaving the lucky proprietors an absolutely free hand as regards the kind of coal they use, instead of being dependent upon the particular kinds that yield gas of a certain illuminating power. The lessened production of coke, together with the gasification of some of that actually made, not only largely reduces the area that must be set aside as a coke floor, but enables better prices to be allowed, so that at Middlesbrough the receipts from sale of coke per 1,000 cubic feet of coal gas made have actually risen 50 per cent., and the coal gas costs 2d. less than formerly. The author not unreasonably anticipates that this satisfactory feature may in time extend to tar and ammonia. The plant that has secured these advantages is a Humphreys Glasgow set, including two generators with washers, scrubbers and condensers, contained in the generating house, two sets of blowers, exhausters, oil, lift and circulating pumps, with engines and boilers, a tar separator, relief holder, oil storage tanks, four purifiers and a station meter. All these were described in detail; also, full particulars as to methods of working were given. The average cost of 24-candle water gas, during the first season's working, was 1s. 2d. per 1,000 cubic feet, and that of 14-candle coal gas was 10.7d., yielding a 17 candle mixed gas at a cost of under 1s. per 1,000. But the whole of the details of the apparatus were not complete, and at the same time the old horizontal coal retorts are being replaced by modern, inclined ones. When these matters are completed the cost of water gas will be under 1s., and that of coal gas 7.34d., bringing the average cost of 17-candle gas to 8.65d., only 1.31d. more than unenriched 14-candle. The enrichment is, therefore, effected for less than 0.5d. per candle.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

MR. F. B. WHEELER has resigned the position of General Manager of the Consolidated Gas Company, the headquarters of which are Long Branch, N. J., to accept a similar ranking position with the Binghamton (N. Y.) Gas and Electric Company.

MR. C. D. STRONG succeeds Mr. Wheeler in the management of the Consolidated Company. Mr. Strong was in charge of the Consolidated Company's station at Asbury Park, N. J.

MR. WILLIAM STEINWEDELL, the clever son of President Steinwedell, of the Quincy (Ills.) Gas Light and Coke Company, has just returned from a prolonged apprenticeship abroad. Early in the spring of 1896 the son of his father went to Germany and placed himself under the tutelage of Herr von Oechelhaueser, the Director of the German Continental Gas Association, with a view to acquainting himself with the best German practice in gas works construction. The youngster was given every opportunity of thus equipping himself, for he was prominent in the work of building the Continental Association's complete new plant at Erfurt. He admits, however, that the United States will do pretty well as a permanent abiding place; for he's "come home to stay."

MR. ISAAC BATTIN, Treasurer and Engineer of the Omaha (Neb.) Gas Company, is having much more than ordinary satisfaction over the growth of trade in his city, the increase in output last year over the output of the next former year having shown the greatest percentage gain in the records of the Company for any twelvemonth.

THE Portsmouth (Va.) Gas Company is making notable extensions to its main system.

THE Board of Directors of the Nashville (Tenn.) Gas Light Company have agreed to submit to the shareholders a proposition to increase the capital stock in the sum of $62,500, thus bringing the total capitalization to $1,000,000. The stock will be offered pro rata, at par, to holders of record. The proceeds are to be used to retire the floating debt of the Company. A special meeting of the shareholders to accept or reject the proposition has been called for June 22d.

THE affairs of the defunct Hanover (N. H.) Gas Light Company have been virtually wound up. It is thought that the assets will net the shareholders about 20 cents on the dollar.

MR. JOHN LIVERMORE, one of the original Directors of the Cambridge (Mass.) Gas Light Company, died at his home in Cambridge, on the morning of the 16th inst. Deceased, who was born in Cambridge, October 9, 1813, was a descendant of John Livermore, who came to America in 1634. Mr. Livermore was the first President of the Cambridge City Bank, and incorporator of the Cambridge Railroad, and President of the Cambridge Water Works. He served on the Common Council (in fact, was the first President of that body), on the Board of Aldermen and on the School Committee. He also served in the lower branch of the State Legislature. He was a member of the Unitarian Church and was much respected by his fellow townsmen.

THE City Council, of Keokuk, Iowa, has refused to grant a franchise for the operation there of an opposition gas company.

ADVICES from Detroit, Mich., are to the effect that the Mount Clemens (Mich.) Common Council have granted a franchise for a gas works at that place to Messrs. George H. Paine and William G. Smith, of Detroit. It is specified that the selling rates shall not exceed: For an illuminating supply, $1.50 per 1,000 cubic feet; on fuel account, $1.25 per 1,000.

THE plant of the Norwalk (Ohio) Company was recently sold at sheriff's sale. The reported purchaser was Mr. Theodore Williams, at his bid of $3,000.

AT a special meeting of the Rome (Ga.) Gas Light Company, Mr. J. J. Childs, Secretary of the Company, was authorized to prepare the following announcement for publication in the local newspapers:

Be it Resolved, That in order to induce the citizens of Rome to increase their use of gas, the price shall be reduced from $1.80 to $1.50 per 1,000 cubic feet; and in order to secure prompt payment for all gas used a further reduction of 20 cents per 1,000 shall be made to all consumers who use 1,000 cubic feet or more, provided payment is made for same at the office of the Company on or before the 5th day of the month, making $1.30 per 1,000 the net price for cooking and heating gas. And be it further

Resolved, That the Gas Company shall keep on hand, for sale at lowest possible prices, either for cash or on installment plan, gas stoves, instantantaneous water heaters for bathrooms and other gas appliances.

MR. J. FRANK STACEY, Superintendent of the Nashville (Tenn.) Gas Light Company, in sending his regrets to Secretary Dunbar, of the Western Gas Association, at his inability to be present at this year's meeting, said among other things: "* * * We are pushing the sales of gas, under the following system. We employed canvassers, having them make a house-to-house canvas for the purpose of soliciting orders for gas cooking stoves, ranges or prepayment meters. In 10 days we secured orders for 300 stoves, which were placed according to the following printed conditions—we reserving the right to say whether prepayment or ordinary meters should be placed to measure the gas supply to stoves or for purposes of illumination:

No.....

Nashville, Tenn.,.....day of ..... 1898.

The Nashville Gas Light Company agrees to furnish.....
.....at No.....street, the use of a gas stove with prepayment meter, for a period of twelve months, beginning from this date, and in consideration thereof the said.....
.....agrees to buy for each and every month of said period not less than one dollar's ($1) worth of gas, as measured by said meter, at the rate of $1.35 per 1,000 cubic feet. The title to said stove and meter is to remain in the said Nashville Gas Light Company, which

retains the right to remove the same upon the failure of said.....
.....to buy during any month the amount of gas above stipulated. NASHVILLE GAS LIGHT CO.,
by * * *, Solicitor.

After all the free stoves had been placed, it was surprising to see the number of people who came to the office begging for stoves on the same conditions. Our reply to them is we are sorry they did not take advantage of the opportunity to give the canvasser an order, when he called upon them. We then offer to sell them outright a similar stove for $11 cash, and to give them $5 worth of gas, free. This proposition invariably is accepted by them, and we are now selling, on an average, 5 stoves per day—although the gas stove season is not really more than opened. We are now placing the prepayment meters in 'sporting houses,' stores, and residences, such as we have doubt as to credit. This does away with requiring deposits, and often enables us to reach people who have not hitherto used gas. By the way, I see that Mr. C. H. Raynor, of Adrian, Mich., is listed on the convention programme to read a paper on 'The Prepayment Meter,' and I hope you will not consider it presumptuous on my part should I give you my experiences and ideas respecting the prepayment or slot meter. In an effort to increase our business, by the introduction of the prepayment meter, for the purpose of measuring either an illuminating or fuel supply of gas, objection was made that the meter would not deliver all of the gas paid for—especially the last 20 or 30 feet—at the proper pressure. To determine whether or not the objection held good, a rigid test was entered into on the prepayment meters of Helme & McIlhenny type, and the Glover mechanism used on the meters of D. McDonald & Co. The test developed the following results with the H. & M. type. At any initial pressure from 25-tenths to 16-tenths, the valve begins to shut off, when there is still 25 feet of gas to be burned. The shutting off is gradual, as follows: With 25 feet to be burned, 16 tenths; with 10 feet, 14 tenths; with 5 feet, 8 tenths; with 2 feet, 4 tenths. The McDonald & Co. meter, with Glover attachment, under same initial pressure and similar conditions, showed the following: With 25 feet to be burned, 16 tenths; with 20 feet, 12 tenths; with 10 feet, 10 tenths; with 5 feet, 5 tenths. The rate of consumption in these tests was 35 feet per hour. As our illuminating and fuel gas supply is charged at different prices, we prefer the Glover attachment as used on the McDonald meter, because we can use it for either fuel or illuminating gas, the change plate enabling us to set the meter for the number of feet of gas at either of our prices. I would suggest that the manufacturers devote themselves to perfecting a trigger valve, that shall be instantaneous in its action, instead of the gradual shutting off, so as to enable the meter to deliver all the gas at the proper pressure. With that change, and a progressive gas man at the back of its placing, the prepayment meter will be a success, and will materially add to the income of any gas man who advocates it. We are also agents for the Welsbach lamp, and are now making lump bids at so much per year, according to the number of lights. We have secured the lighting of the Post Office and Custom House during the past two years, and are the lowest bidders this year by $300. The results for the past two years were very satisfactory. We are now installing Welsbach lights free of charge, to large consumers who sign yearly contracts to use gas exclusively, at the regular price, they to pay for all renewals. We are using only the Star chimney, made by the Phœnix Glass Company. As these chimneys are almost indestructible, they prolong very much the life of the mantle. From the foregoing you can readily see we are hunting our competitor. We have already caused the red flag to be placed on three former companies, and are now hot on the trail of the existing one. I hope that you will have a profitable and pleasant meeting."

AT the annual meeting of the Matawan and Keyport (N. J.) Gas Company the Directors declared a dividend of 4 per cent. This is said to be the largest dividend in the history of the corporation. In time perhaps the Company may be able to put its plant in better shape.

NOTICE has been filed with the Secretary of State of Pennsylvania that the Consolidated Gas Company, of Pittsburgh, has succeeded to the properties of all the other artificial gas companies of that city.

A CORRESPONDENT at Cincinnati forwards the following: "These resolutions were adopted at a recent meeting of the Cincinnati Gas Light and Coke Company:

"'*Whereas*, The conditions of war now existing between the United States and Spain having necessitated calling the Ohio National Guard into active service; and,

"'*Whereas*, Several of the employees of this corporation are members of said National Guard, and are desirous of entering active service with the regiments to which they belong, or other volunteer regiments which may be subsequently organized; now, therefore, be it

"'*Resolved*, That to any and all such permanent employees as choose to enter the service assurances be given that upon their return from such service they will be restored to duty in the positions now occupied and which have been thus voluntarily relinquished for the purpose indicated, and in case dependent families of any such soldiers require pecuniary assistance—occasioned by the absence of such employees—the same will be given.'"

THE Pittsburgh (Pa.) *Leader* says that a Hamburg (Germany) firm is offering American cast iron gas main pipe at rates, notwithstanding freight charges and German import duties, that are lower than those listed by German iron pipe manufacturers.

THE new rate of $1.50 per 1,000 cubic feet has gone into effect at Atlantic City, N. J.

OTTAWA, Can., advices respecting the annual meeting of the Ottawa Gas Company, are: "Mr. John Coates, C. E., presided, and, in moving the adoption of the report and balance sheet, called attention to the fact that, when he took the direction of the Company's affairs (six years ago) the price of gas was $2 net per 1,000 cubic feet for both light and fuel, whereas now the price is $1.50 per 1,000, to customers using gas exclusively for lighting, and $1 per 1,000 to those who use it on fuel account—rates equal to those which prevail in Montreal. He said the days of big profits had gone by, and he believed in the policy of cheap gas and greater consumption. *They* must be satisfied with a modest 7 per cent. dividend; but that dividend had been earned in the face of lower rates and the supplying of a high candle power illuminant. In 1892 the number of consumers on the Company's books was 900; in 1898 the number is 1,928. The increase in consumption in 1897 as against 1896, amounted to 7,000,000 cubic feet. In six years the sum of $165,000 had been expended in improving the plant, and the Company's works were now in every sense modern. The reports, of course, were unanimously adopted, and the meeting wound up in a general, though unconflicting, act of mutual admiration."

THE suit of Charles A. Furbush, to recover from Mr. Henry C. Kelsey, President of the Newark (N. J.) Gas Company, the sum of several millions of dollars, as commission of complainant for his services in procuring the consolidation of the Citizens Gas Light Company and the Newark Gas Light Company (both of Newark), has been decided in favor of defendant.

THE Providence (R. I.) *Journal*, of the 19th inst, says: "By reason of the great expense to which the Pawtucket Gas Company had been put in the building of a gasholder, the Appellate Court, of Rhode Island, yesterday refused to grant the petition of William M. Harris for an injunction against the Company to restrain its using a portion of South street for its building. Mr. Harris claimed that his property was injured by the obstruction in the highway, but because of the much greater injury that would be caused by the tearing down of the gasholder, Mr. Harris will have to let the structure remain and sue the Company for damages. South street ends in a cul de sac at the point where the gasholder was built. The gasholder extends across the entire width of South street and comes within a short distance of the building of Mr. Harris; that is, the length of the street is reduced by so much, and Mr. Harris says that by reason of this erecting of the structure on a portion of the street, his own property is rendered less valuable. Mr. Harris asked that the Gas Company be ordered to remove a portion of its gasholder from the portion of South street into which it extended. The Company admitted the taking of a part of the highway without authority, but said it didn't have sufficient land on which to build the gasholder. But the portion of the highway taken was of no particular value to Mr. Harris. At the time the bill was filed $35,000 had been expended on the gasholder. Testimony was given yesterday before the Appellate Court, and the case was decided immediately on the conclusion of the hearing. Ripley & Henshaw and W. W. Blodgett appeared as counsel for the Gas Company.

IN addition to the standard, double superheater Lowe water gas apparatus, which the United Gas Improvement Company is building for the Washington (D. C.) Gas Light Company, it has been awarded a contract for two large multitubular water tube condensers.

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MONDAY, MAY 30, 1898.

Glasgow Electric Power Supply.

Engineering says it can scarcely be said that Glasgow (Scotland), progressive in most things, has advanced in respect of her electric supply at the same rate as even smaller cities. The existing central station, in the middle of the city, with plant of 3,300-horse power, has frequently been overtaxed, and numerous complaints have been made as to inadequacy of illumination. For five years the annual increment on the number of lamps has been 30 per cent ,and yet the corporation is only bestirring itself now to add to the plant. They have had to do it in a hurry, accepting offers which insured delivery in August, to save a collapse next winter; and this new plant of 2,200-horse power is to be installed in a new station at Port Dundas, in the north of the city. But now the whole question of future supply has been considered, and important developments, suggested by Mr. W. A. Chamen, the newly appointed engineer to the electricity department, determined upon. In addition to Port Dundas station, where there is to be room for 30,000-horse power, the corporation intend to have a station at Pollokshaws Road, on the south side of the river; and here plant of 15,000 horse power will ultimately be installed. The area of supply now is limited to the center of the city; but with extensions it is intended to use the 3-wire system, with 250 volts, as the standard pressure to consumers, so that the conductors from each of the two new stations may be 2 miles long, practically embracing the whole of the municipality; and even should it be desirable to supply suburban burghs or outlying districts beyond this area, there will be nothing to prevent the fixing of plant on a partial high tension system in the new generating stations. The use of the higher voltage now proposed, as compared with the 200 volts of the existing station in Waterloo street, means the ultimate superseding of that station. The buildings now being erected at Port Dundas station are equal to accommodate 10,000-horse power; and in addition to the 2,200-horse power already ordered for delivery in August, a similar installation is to be ordered for delivery next year; while at the same time conductors will be laid through many streets. At the south side station, generating plant of 2,200-horse power is to be ordered, and ultimately the equipment of the Waterloo street station removed to it; making next year a station of 4,400-horse power in the north, and one of 5,500-horse power in the south of the city, equal together to running continuously 452,000 lamps. This work will cost in all $2,755,000. The consumers' rate per unit is to be lowered; but there is no reason to anticipate any reduction in the revenue per lamp fixed, which was $1 53, giving $715,000 for 452,000 lamps. The total works cost, taken at 40 per cent. of revenue, leaves $285,000 for depreciation at 9 per cent., and for interest at 3½ per cent., so that on this basis there would be a surplus of $80,000. Mr. Chamen anticipates that the 452,000 lamps will be running by 1901. The electricity committee of the corporation have approved of the scheme.

Some Lessons from a Fire.

The Metal Worker for the 7th inst. reported that the plumbing shop of Hindle & Williams, in the Freeman Building, Orange, N. J., was damaged by fire caused by the explosion of a barrel of gasoline, which report called forth the following interesting and suggestive letter from Hindle & Williams, which explains itself:

In regard to fire damaging Hindle & Williams' plumbing shop, you were not quite right. Our shop received no damage. Fire was second store away. We came very near being completely burned out, but thanks to the firemen and a good water supply, we escaped.

Now that it is all over, it occurs to us that there are some lessons for our fellows. There were five of us within 25 feet of the beginning of the fire; all men of experience. We used every means within our reach to control that fire that we could think of, and yet when it was put out there was a damage to our neighbors of near $5,000. It all came from a tank of gasoline which a neighbor kept outside of the building in an area 8 feet deep. Stone wall on area of two sides. Brick wall of building on third side. Area was open on fourth side. Top of tank was 3 feet below top of area. An open grating of wrought iron bars and cast iron perforated plate across area, just over tank, afforded platform to store entrance, also to passage and staircase leading to second and third story.

At first sight of fire flames were streaming through the grating 2 feet high. The first thought was gasoline—we cannot put it out. It is in a safe place. Next thought was call out Fire Department. Telephone right handy, and the alarm was sent in instantly. Fire Department responded on the jump. Meantime we had drawn and used several pails of water and turned on a stream through a three-quarter garden hose from a convenient hose cock.

A fruitless attempt to put out fire with ashes from a nearby dump was also made. It was seen that the flames were reaching up higher and drifting in the doorway to staircase. The next idea was to shut staircase door from inside, so a man went around by the front stairs. He was driven back. Our next move was to stop the hose company at the hydrant and ask them to take a line up the front staircase to head off the fire. The driver knowing that the fire was in rear, and it being more convenient to run a line that way, besides being in strict accord with the true principle of fighting a fire at the bottom, brought his hose to the rear. The chemical engine also came to the rear. But here their streams at first were of no effect. In these few minutes a smart young man came up and told us that salt would put out the burning gasoline. We had a quart sack handy. It was used. The effect was instantaneous. Out went the fire at its foundation. It had had such a reach on the outside of the building that it had caught on the window frame of the second story, also on third. Then it spread from them to the wooden ceilings. Some second story-windows in front were open, which created a great current, drawing the flame up staircases till it reached the third story roof timber and boards. Here it was finally checked.

The lessons are: Keep gasoline away. Remember that salt will put out a gasoline fire. Call out Fire Department at once, even for a slight blaze. Lastly, keep insured to the actual value of your stock. The insurance companies have an idea of co-insurance that works in this way: If your stock is worth $2,000 and you insure for $500, unless there is total loss you bear three quarters of the loss. They pay one quarter. That is, if the loss be $400 or $500 or $1,000, they will pay you $100, $125 or $250. You lose the three-quarters, for that is the ratio of your insurance to the value of your goods. There were two things more that we might have done had we our wits to think of them. We could have laid a large sheet of iron over grating, which would have diverted the flames from the staircase. We had a roll of asbestos paper that we might have stretched out over the grating and dropped down in area, confining for a time the flame into a small space. But then who knows what else would have happened?

Let the next man profit by this experience if he can.

The Market for Gas Securities.

The market for city gas securities was quite uneven last week, the weakest spot having been Consolidated gas, which sold down to 190¾. The opening in it to-day (Friday) was made at 191 to 191¼. The strong feature was Standard preferred, which was bid 158, holders asking 160. New Amsterdam specialties were in fair demand, and although the sellers were inclined to concede something to the buyers, the trading, which was on a fairly good scale, was effected without much concession from the prices of last week. Mutual is quoted at 330 bid, at which figure it is undoubtedly cheap.

Brooklyn Union is in the market at 120 bid, and it should be higher, for the development of the Kings county section of New York, in respect of its home residences of the quiet, responsible, ordinary sort, is in truth surprising. In the out of-town list we note a great advance (from the percentage standpoint) in Bay State. There are many who wish it would go higher. Peoples, of Chicago, is reflecting its worth in the market rates. We are inclined to urge the purchase of Consumers gas, of Jersey City, at anything under 80. Detroit gas is quoted at 51½ to 53½.

Gas Stocks.

Quotations by Frederic B. Cochran & Co., Brokers and Dealers in Gas Stocks.

20 AND 22 BROAD STREET, NEW YORK CITY.

MAY 30.

☞ All communications will receive particular attention
☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$36,230,000	100	191	191½
Central	500,000	50		..
" Scrip	220,000	..	100	.
Cental Union, Bonds, 5's	3,000,000	1,000	99½	100
Equitable	4,000,000	100	206	215
Bonds, 6's	1,000,000	1,000	105	.
" 1st Con. 5's	2,300,000	1,000	114	.
Metropolitan Bonds	658,000	..	108	112
Mutual	500,000	100	330	337
" Bonds	1,500,000	1,000	100	102
Municipal Bonds	750,000	.	..	
New Amsterdam Gas Co.	13,000,000	100	30	30¼
Preferred	10,000,000	100	69½	70½
Bonds, 5's	11,000,000	1,000	98	99
Northern	150,000	50		
" Bonds	150,000	1,000	..	
Northern Union, Bonds, 5's	1,250,000	1,000	94½	95½
New York and East River	5,000,000	100	81	83
Preferred	2,000,000	100	112	115
Bonds 1st 5's	3,500,000	1,000	109	111
" 1st Con. 5's	1,500,000		104	106
Richmond Co., S. I.	348,650	50	70	..
" Bonds	100,000	1,000	..	
Standard	5,000,000	100	140	142
Preferred	5,000,000	100	158	160
Bonds, 1st Mortgage, 5's	1,500,000	1,000	112	114
Yonkers	299,650	50	130	
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	150	121
" " Bonds (5's)	15 000,000	1,000	113	113¼
Bay State	50,000,000	50	3½	3½
" Income Bonds	2,000,000	1,000	..	75
Boston United Gas Co.—				
1s Series S. F. Trust	7,000,000	1,000	..	92
2d " " "	3,000,000	1,000	70	..
Buffalo City Gas Co.	7,000,000	100	27	..
" " Bonds, 5's	7,000,000	1,000	90	92
Central, San Francisco	2,000,000	..	95	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104¼
Columbus	1,000,000	.	89	91
1st Mortgage	1,085,000	..	101	103½
Consumers. Jersey City	2,000,000	100	75	80
" Bonds	600,000	1,000	100	103¾
Cincinnati G. & C. Co.	8,500,000	100	20¾	..
Consumers, Toronto	1,000,000	50	184½	187
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	.
Consolidated, Baltimore	11,000,000	100	..	89¾x
Mortgage, 6's	3,600,000	..	107	107½
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	..
Consolidated G. & E. Co.'s, Little Falls, N.Y.	90,000	100	..	100
Bonds	75,000	..	..	100
Detroit	4,000,000		48	51
" Con. Bonds	4,312,000	..	..	95
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Fort Wayne	2,000,000	..	75	80
" Bonds	2,000,000	..	88	91
Hartford	750,000	25	..	145
Indianapolis	2,000,000	..	115	125
" Bonds, 6's	2 650,000	..	106	107
Jersey City	750,000	20	180	..
Lafayette Gas Co., Ind.	1,000,000	100	78	83
Bonds	1,000,000	1,000	90	91
Louisville	2,570,000	50	.	..
Laclede, St. Louis	7,500,000	100	47¼	47¾
Preferred	2,500,000	100	91	93
Bonds	9,084,400	1,000	103	..
Montreal, Canada	2,000,000	100	200	.
Newark, N. J., Gas Co.	1,000,000	..	200	220
Bonds, 6's	4,000,000	..	125	130x
New Haven	1,000,000	25	229	..
Oakland, Cal.	2,000,000	..	53¾	54
" Bonds	750,000	..	..	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	98¼	98¾
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,00	1,000	..	108
2d "	2,500,000	1,000	104	105
Peoples, Jersey City	500,000	50	..	175
Rochester Gas & Elec. Co.	2,150,000	50	..	..
Preferred	2,150,000	50	83	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	10,000,000	100	94	94¼
St. Paul Gas Light Co.	1,500,000	100	49	51
1st Mortgage 6's	650,000	..	84	87
Extension, 6's	600,000	..	..	..
General Mortgage, 5's	2,400,000	.	88	90
Syracuse, N. Y.	2,500,000	25	17	19
Bonds	1,000 000		94	97
Washington, D. C	2,000,000	20	250	..
Western, Milwaukee	4,000,000	100	77	78¼
Bonds, 5's	3,556,000	.	102½	103½
Wilmington, Del.	550,000	50	200	

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DIVIDEND NOTICE.

OFFICE OF WELSBACH COMMERCIAL COMPANY,
40 WALL ST., NEW YORK CITY, May 12, 1898.

The Directors have this day declared a quarterly dividend of two (2) per cent. on the preferred stock, payable June 10, 1898, to stockholders of record at the close of business May 31, 1898. Transfer books of the preferred stock will be closed from June 1 to June 10, 1898, both inclusive. Checks will be mailed

1198-3 EDWARD C. LEE, Treasurer.

AN EXPERIENCED GAS ENGINEER AND CHEMIST

is open to accept immediate engagement; charge of works, or on the road. Experience in working inclined retorts. First-class references and testimonials. Address

1178-tf "M. R. S.," care this Journal.

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An active man wants the management of a gas property. A close manager, especially expert in the handling of Lowe water gas machinery. Member of the American Gas Light Association.

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Hydraulic, Dip, Branch and Ascension Pipes, Mouthpieces and Lids, for four Benches of 5's and for one Bench of 3 retorts.

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Multitubular Condenser, shell, 36 in. diameter, with 99 2-in. tubes, 10 ft. 6 in. long.

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S-inch Center Seal. Four Purifiers, 8 ft. x 6 ft.

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For Sale.

A Small Gas and Electric Light Plant,

in a Southern city of 3,800 inhabitants.

Address FORT WAYNE ELECTRIC CORPORATION,

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Two 50-H.P. Otto Gas Engines,

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Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

Ammonia Concentrator,

Not Expensive. Write to

STROH & OSIUS, Pat'ees, or
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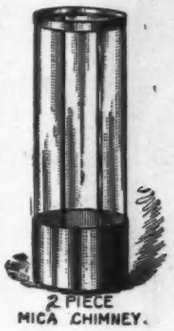

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WE MAKE LAVA TIPS OF ALL KINDS.

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CHATTANOOGA, TENN.

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GAS ENGINEERING

AND

CONSTRUCTION.

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Values Ascertained, and Advice as to Management.

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No Air Shutter, therefore no Smoked Mantles. Hot Air taken from Chimney. Impossible to snap back. "VICTOR" MANTLES are the strongest and most durable on the Market.
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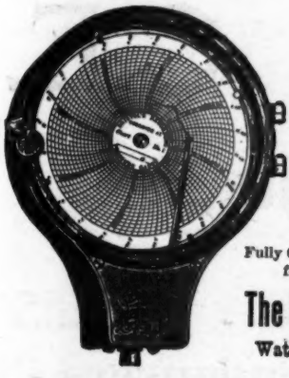

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Simple in Construction, Accurate in Operation Low in Price.

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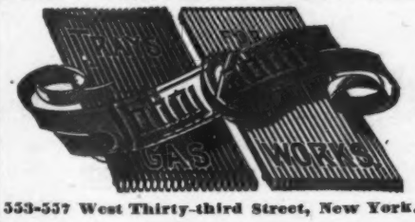

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WITH A VERY FULL COLLECTION OF TABLES OF HEATS OF COMBUSTION OF FUELS, SOLID, LIQUID AND GASEOUS.

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By HERMAN POOLE, F.C.S.

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Recuperative Furnaces, Washers, Condensers, Purifiers and Purifying Machines, Ammonia Plant, Coke Conveyers, Etc.

Complete Works Erected with Guaranteed Results.

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Coal and Water Gas Plants,

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Recuperative Furnaces, Washers, Condensers, Purifiers, Purifying Machines.

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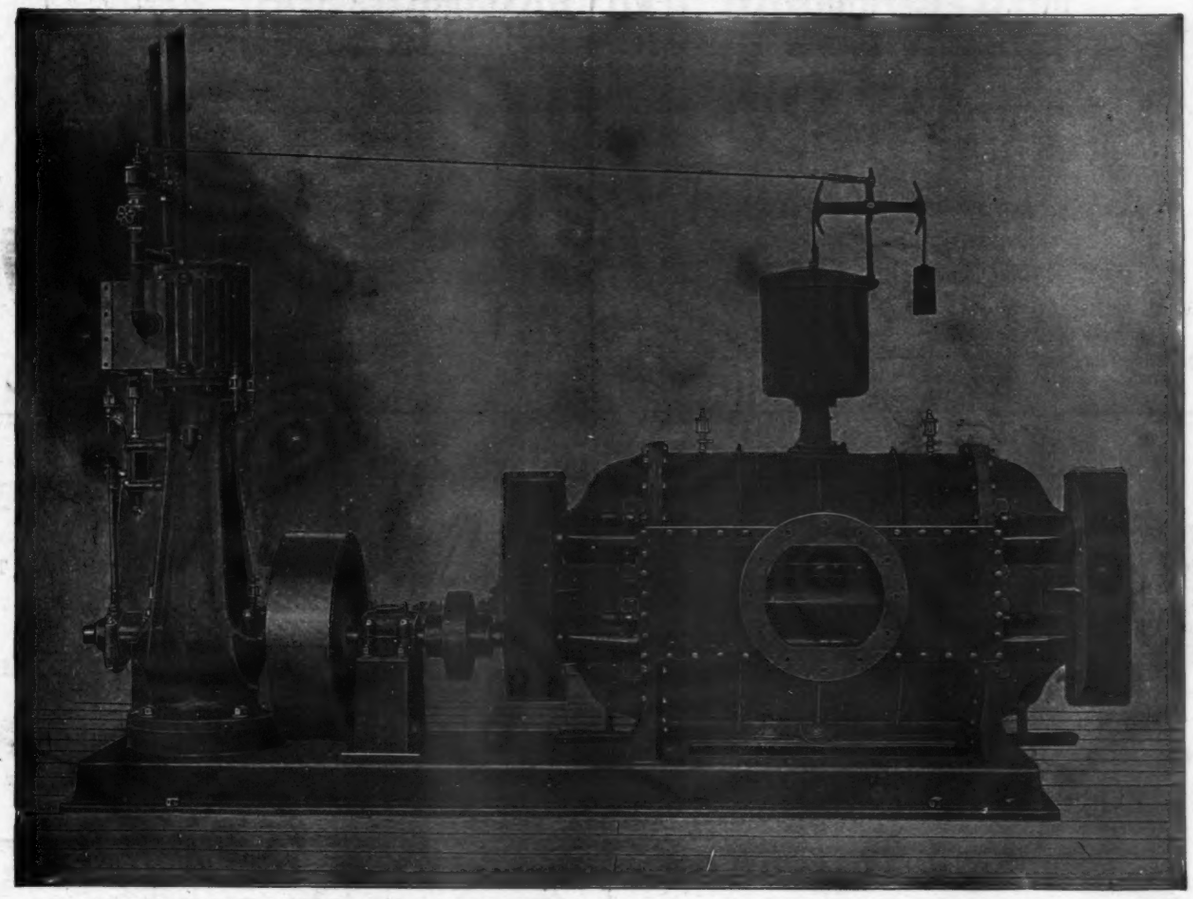

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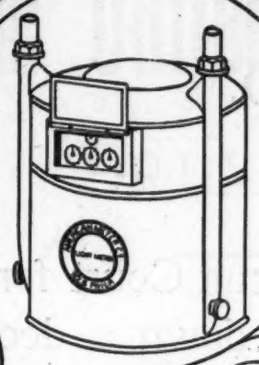
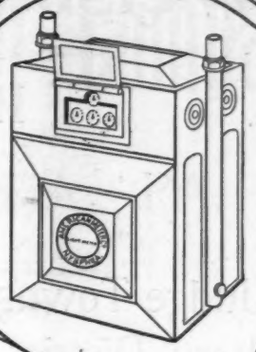
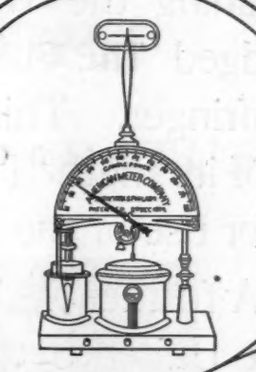


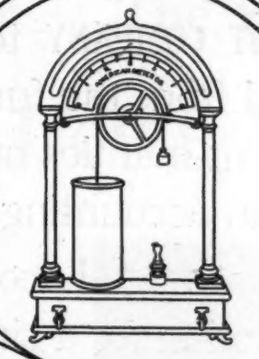


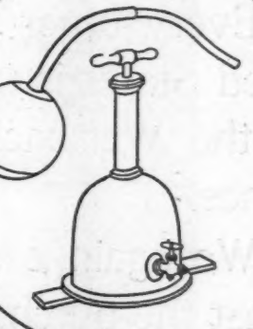
PUBLIC LIGHTING TABLE.

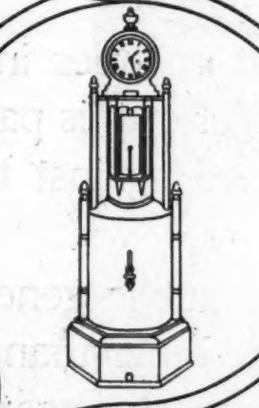
JUNE, 1898.

Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Extinguish.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Light.	Extinguish.
				P.M.	A.M.
Wed.	1	1.30 AM	3.30 AM	7.15	3.15
Thu.	2	2.20	3.30	7.15	3.15
Fri.	3	No L.	No L.	7.15	3.15
Sat.	4	No L. FM	No L.	7.25	3.15
Sun.	5	No L.	No L.	7.25	3 15
Mon.	6	8.00 PM	10.50 PM	7.25	3.15
Tue.	7	8.00	11.30	7.25	3.15
Wed.	8	8.00	12.00	7.25	3.15
Thu.	9	8.00	12.30 AM	7.25	3.15
Fri.	10	8.00 LQ	1.00	7.25	3.15
Sat.	11	8.00	1.20	7.25	3.15
Sun.	12	8.00	1.50	7.25	3.15
Mon.	13	8.00	2.10	7.25	3.15
Tue.	14	8.00	2.40	7.25	3.15
Wed.	15	8.00	3.30	7.25	3.15
Thu.	16	8.00	3.30	7.25	3.15
Fri.	17	8.00	3.30	7.25	3.15
Sat.	18	8.00 NM	3.30	7.30	3.15
Sun.	19	8.00	3.30	7.30	3.15
Mon.	20	8.00	3.30	7.30	3.15
Tue.	21	8.00	3.30	7.30	3.15
Wed.	22	8.00	3.30	7.30	3.15
Thu.	23	9.10	3.30	7.30	3.15
Fri.	24	9.40	3.30	7.30	3.15
Sat.	25	10.00	3.30	7.30	3.15
Sun.	26	10.30 FQ	3.30	7.30	3.15
Mon.	27	10.50	3.30	7.30	3.15
Tue.	28	11.30	3.30	7.30	3.15
Wed.	29	12.00	3.30	7.30	3.15
Thu.	30	12.50 AM	3.30	7.30	3.15



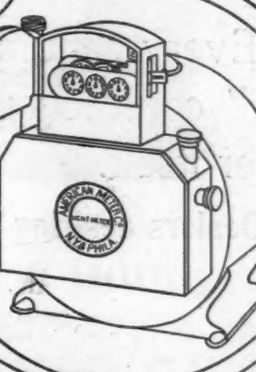


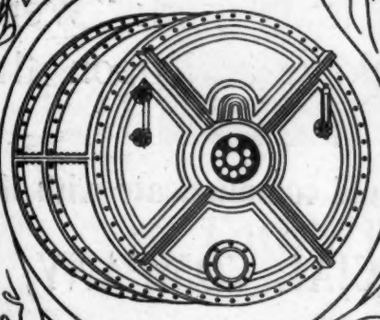




TOTAL HOURS LIGHTING DURING 1898.

By Table No. 1.	Hrs.Min.	By Table No. 2.	Hrs.Min.
January	210.40	January	423.20
February	186.40	February	355.25
March	181.20	March	355.35
April	166.10	April	298.50
May	156.40	May	264.50
June	144.30	June	234.25
July	147.30	July	243.45
August	157.10	August	280.25
September	169.50	September	321.15
October	186.00	October	374.30
November	204.30	November	401.40
December	218.30	December	433.45
Total, yr.	2129.30	Total, yr.	3987.45





Welsbach Patent Sustained.

INJUNCTION GRANTED.

Judge Townsend, in the United States Circuit Court for the Southern District of New York, has handed down a decision sustaining the Welsbach Light Company's Rawson patent, and adjudged **THE SUNLIGHT INCANDESCENT GAS LIGHT COMPANY** to be an infringer. This Company has been enjoined from the further use of its method of manufacture of incandescent mantles or the sale or use of the same, and ordered to render an accounting.

A further decision has been handed down by Judge Lacombe in the United States Circuit Court, granting a motion for a similar injunction against **THE REX INCANDESCENT LIGHT COMPANY.**

Every other manufacturer of incandescent mantles in the United States is under these decisions an infringer of this patent, and the Welsbach Light Company will proceed against them at once.

We again caution gas companies and the public generally against the purchase of any incandescent mantle other than that made and sold by the Welsbach Light Company or its agents.

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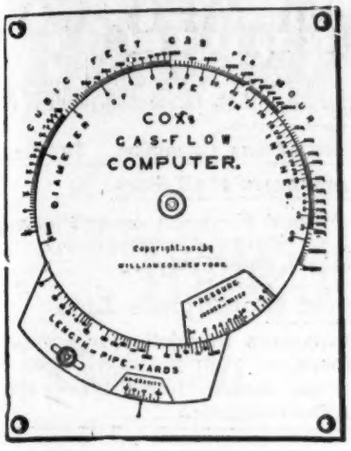

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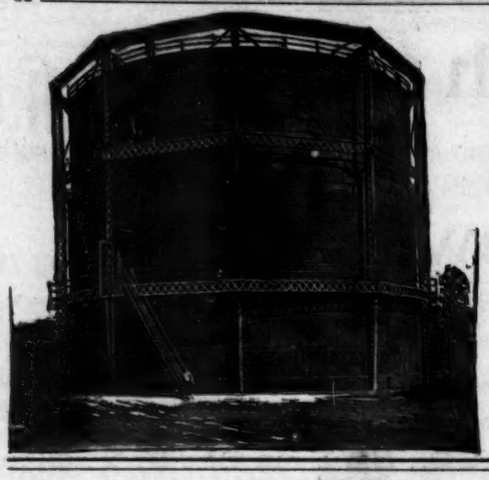

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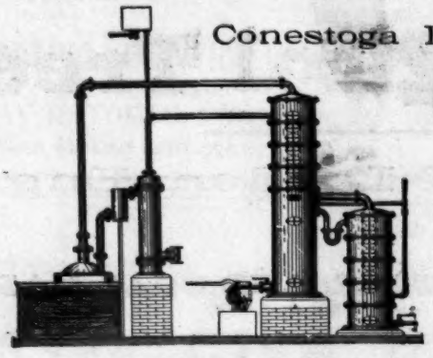

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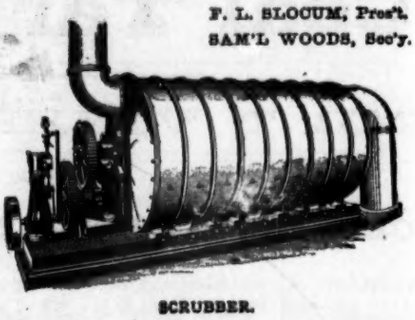

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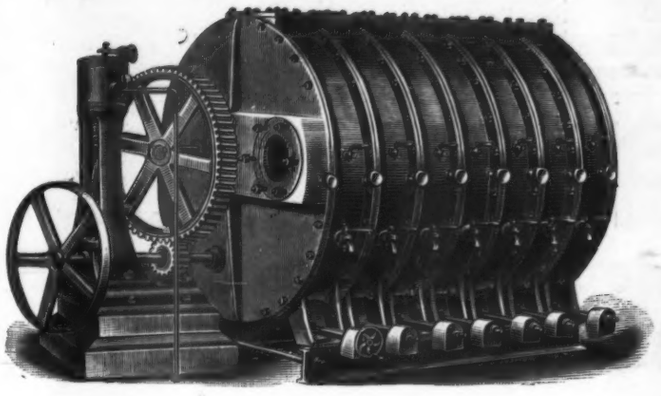

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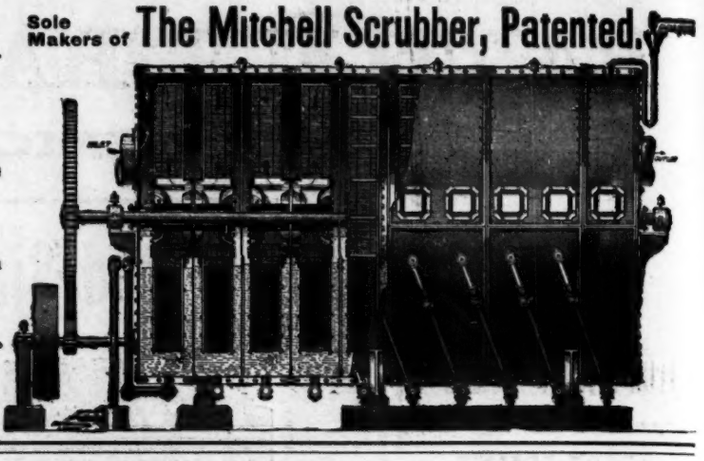

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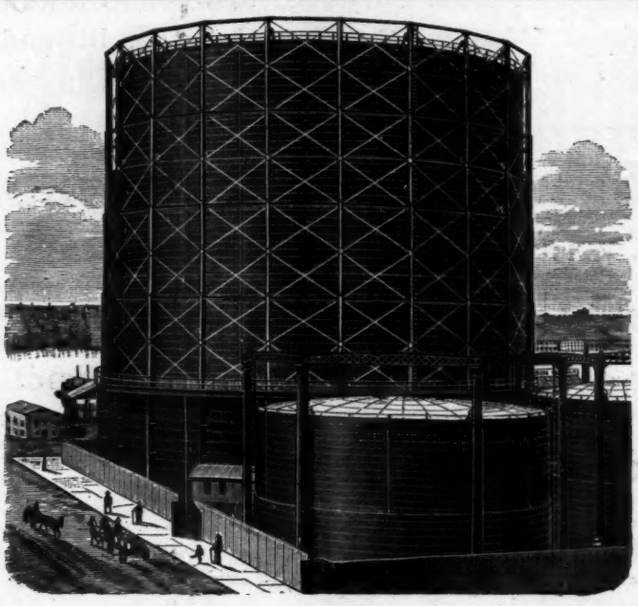

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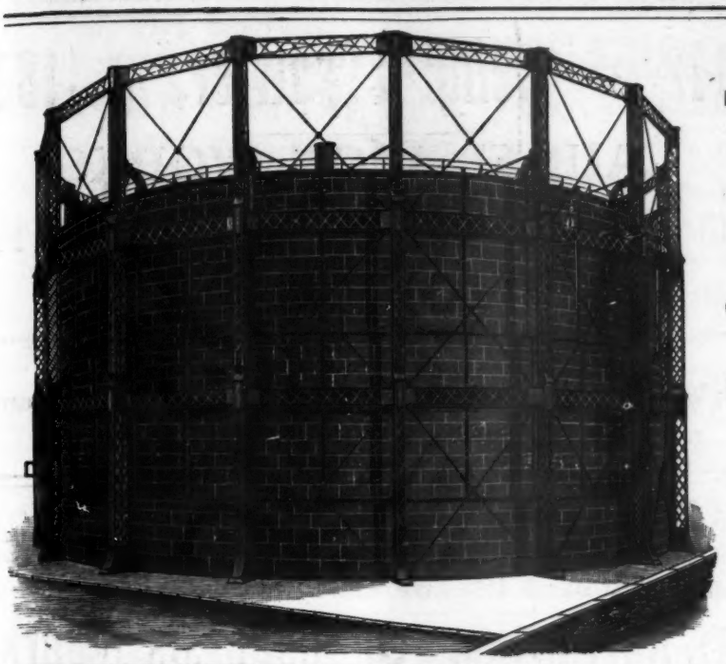

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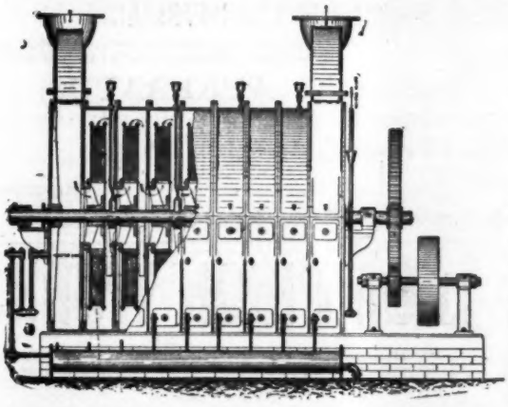

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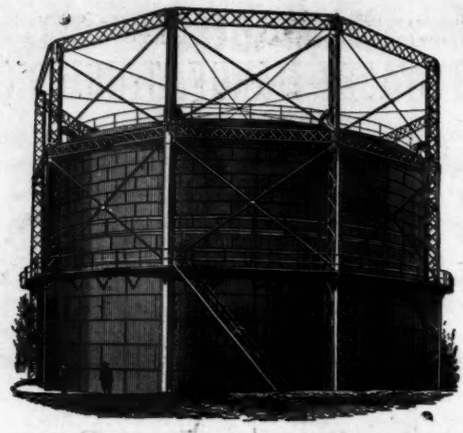

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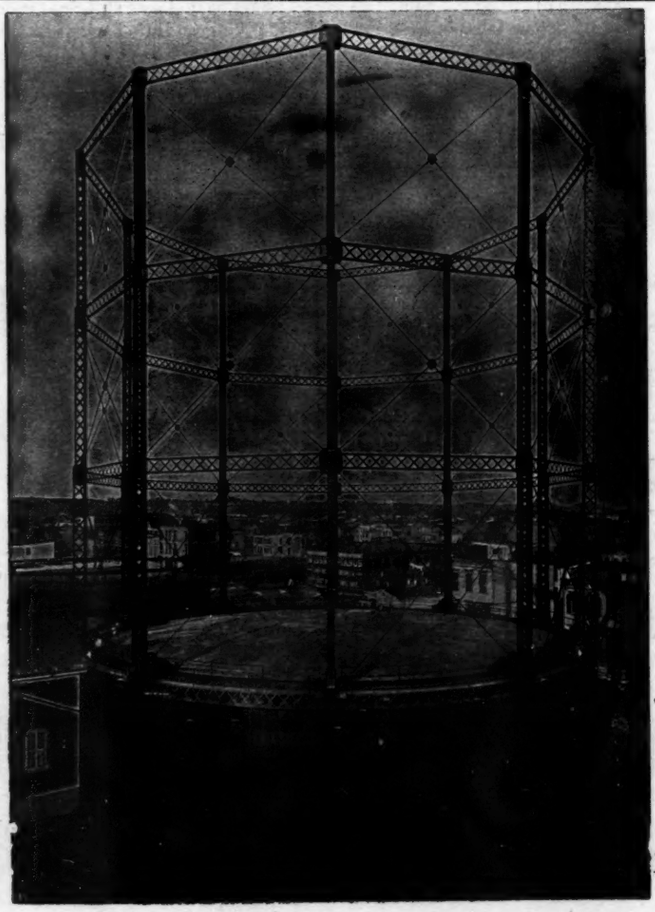

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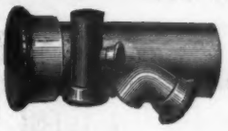
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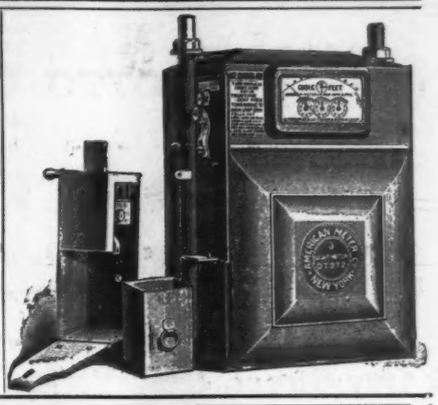

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